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VOL. XXIV.—1909.

THE  
JOURNAL OF LARYNGOLOGY.  
RHINOLOGY, AND OTOTOLOGY;

AN ANALYTICAL RECORD OF CURRENT LITERATURE

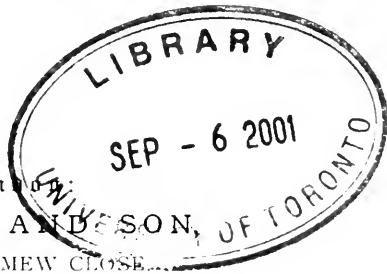
RELATING TO

THE THROAT, NOSE, AND EAR.

PUBLISHED MONTHLY.

London:  
ADLARD AND SONS, OF TORONTO  
BARTHOLOMEW CLOSE.

ENTERED AT STATIONERS' HALL.



1196



# THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

*Founded in 1887 by* **MORELL MACKENZIE and NORRIS WOLFENDEN.**

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THE  
JOURNAL OF LARYNGOLOGY,  
RHINOLOGY, AND OTOTOLOGY.

*Original Articles are accepted by the Editors of this Journal on the condition that they have not previously been published elsewhere.*

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*Editorial Communications are to be addressed to "Editors of JOURNAL OF LARYNGOLOGY, care of Messrs. Adlard and Son, Bartholomew Close, E.C."*

**PROFESSOR POLITZER ON LABYRINTHINE OPERATION.**

READERS of the new edition of Professor Politzer's "Text-book of Diseases of the Ear," which we have the pleasure of reviewing in our present issue, will no doubt turn with great interest to his remarks on the involvement of the labyrinth in suppurative disease of the middle ear. Their interest will be especially excited by his views in regard to the indications for operative treatment of that condition. In general he enumerates the following points as those chiefly to be considered in establishing the indications for operation on the labyrinth: (1) the "complex" of symptoms indicative of labyrinthine suppuration; (2) the degree of disturbance of hearing; (3) the presence of cerebral complications; (4) the changes found in the labyrinth during the mastoid operation. He then expresses the opinion that the operation is contra-indicated in the presence of hearing-power for speech and maintained reaction of the vestibular apparatus, even if there is found a fistula in the semi-circular canal. Under such circumstances he holds that there is no reason to anticipate the occurrence of post-operative meningitis. On the other hand, complete deafness and loss of labyrinthine reaction (absence of physiological nystagmus, etc.) especially in cases of cholesteatoma and tuberculosis, call for free opening of the labyrinth, whether there is a defect found in the labyrinthine capsule or not. It is in these cases that the persistent labyrinthine suppuration leads to meningitis, and in which the radical operation is accompanied by the danger of post-

operative meningitis. It is further to be kept in mind that continuance of the labyrinthine suppuration interferes with the epidermisation of the cavity after the radical mastoid operation, whereas prompt healing takes place if the suppurating cavity in the labyrinth is eliminated. The question of preservation of the residua of hearing does not, in his opinion, have any weight against the danger of meningitis following labyrinthine suppuration, because, as observations by Alexander and Freitag show, it is very common for the small amount of hearing-power found after the radical operation to vanish away little by little. Further, opening of the labyrinth is indicated if there is manifest caries of the labyrinth complicated with facial paralysis, also if after the radical mastoid operation symptoms set in which point to meningeal irritation, or again, if symptoms of any cerebral complication are present.

It will be seen that Professor Politzer endorses the views as to the value of the "caloric" tests for activity of the labyrinth entertained by Dr. Bárány, to whom we are indebted for these tests.

Another point is the loss of hearing, and the professor points out the difficulty in detecting unilateral deafness. He makes, however, no reference to the use of the "noise-apparatus" recently described in this JOURNAL, which Dr. Bárány brought forward at the last meeting of the German Otological Society. Possibly the "Lehrbuch" was already out of the author's hands before the method had been fairly tried. Herzog has recently advanced the opinion, founded on investigations by the late Professor Bezold, that if the ear can hear the tone of the *a'* tuning-fork the labyrinth is still functionally active.

This chapter in the new edition of Professor Politzer's authoritative text-book is well worthy of careful study.

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POST-GRADUATE TEACHING IN LONDON.—Systematic teaching is given at the special hospitals as hitherto, in addition to the regular clinics. We are favoured with a list of the lectures at the Hospital for Diseases of the Throat in Golden Square, and with a syllabus of a course of instruction in the surgical anatomy and operative surgery of the ear, nose, and throat, to be given at the Central London Throat and Ear Hospital.

### RETROSPECT OF LARYNGOLOGY FOR 1908.

THE published papers of authors, as well as the proceedings and transactions of the different Laryngological Associations, show that in this part of our special department excellent work has been done of late.

During the past year we have abundant evidence in the number of cases recorded of patient, careful clinical work, and the same might be said of the study of aetiology and pathology<sup>2</sup>, while the technique, in many instances, has been made richer by the addition to, and improvements in, our instruments. If no new drugs have been added to the list of the many already in use, chemistry has not been at a standstill. Variations and improvements in production have done much to insure stability, and certainly the results have been gratifying from the standpoint of therapeutics.

Unquestionably, one feature of last year's work has been the attention given to the direct methods of illumination of the larynx and the respiratory tract generally. Of course, the same thing may be said of the œsophagus. It is now some years since Killian gave his first demonstration in this country at Manchester, and while great study and progress was made in the appreciation and employment of his instruments, it would seem as if only now the whole profession was realising what an enormous change is being brought about by the new methods. The technique was excellent as first demonstrated by Professor Killian, but there can be no doubt that great advances have been made at home and abroad in the way of new instruments. After the most patient research, Dr. Brünings has given us a set of thoroughly practical instruments, giving splendid illumination, thus rendering the whole procedure much simpler, and all surgeons and laryngologists are indebted to him. In the same way, Dr. Chevalier Jackson, of Pittsburg, has been fortunate in his methods and also in the great ingenuity displayed in his style of instrument, where the point of illumination is at the distal extremity.

The subject was dealt with in an address by Dr. Macintyre, at the opening of the Winter Session of the Central London Throat and Ear Hospital. Commenting upon this in *The Lancet* of November 7, 1908, the editor says: "Dr. Macintyre was careful to insist that such examinations (X-rays) were complementary to the examination of the nose, throat, trachea and bronchial tubes, by direct vision, which has been developed

during the last twelve years, following on the work by Reichert, by observers such as Kirstein, Killian, Chevalier Jackson, Brunings, and himself. Laryngoscopy, again, owes to the physicist the incandescent electric lamps, without which the modern method of direct inspection of the air-passages would not be possible, and the methods of diagnosis by transillumination were not available until that source of light was obtainable in a convenient form. Dr. Macintyre pointed out that the direct inspection of the respiratory tract has introduced a new era in laryngology, and is comparable to Garcia's ever-memorable discovery that laid the first foundation of his scientific study. There can be no question of the justice of the Glasgow teacher's claim. The evolution of the methods now in use in his art, although it has advanced rapidly, has done so in well-defined steps."

In the lecture above referred to Dr. Macintyre pointed out that the position of X-rays, in relation to laryngology, can now be defined. For long it had become evident to those engaged in our special department that many lesions of the larynx (and quite apart from conditions resulting from foreign bodies) could only be determined by careful exploration of the interior of the chest either by means of the fluorescent screen or radiogram. Further improvement in technique now enables us to take instantaneous pictures of the chest, thus giving much less trouble to patient and doctor, and enabling us to distinguish between aneurysm, where movements take place, and fixed tumours of the simple or malignant type.

As usual, the chronic affections of the larynx and neighbouring organs have had great attention paid to them during the year, but unfortunately, as we have had to record in former years, no specific remedy has yet been discovered. Much has been heard of experimental treatment, such as with formalin and like remedies, but the truth remains that so far nothing has taken the place of early surgical procedure. The early diagnosis and removal of the affected parts, as soon thereafter as possible, is the only safe rule. Fortunately, in the case of the larynx, the results of laryngotomy, so strongly urged by Semon and other English surgeons, has done much to save life and to prevent the more serious procedure of laryngectomy.

The second great study amongst our chronic affections is that of tubercle, and we have every reason to be gratified with what has been done in the clinical and pathological aspects of the study.

Unfortunately, as in the case of malignant diseases, no specific remedy upon which the profession, generally, can rely, has yet been placed in our hands. The early detection of the affection, and the treatment in sanatoria with open-air methods of living, combined with absolute rest to the larynx, have done much to prolong life, but it is to be hoped that still further progress is to be made in combatting this terrible affection ere long. No body of surgeons can be more impressed with the importance of this than those devoting themselves to the study of the larynx, knowing well how disastrous this affection there proves as compared with the same affection in the lungs. The necessity for surgical interference, as the result of neglect of early treatment, was raised in the American Laryngological Association this year by Dr. Grayson, and some cases have also been reported of laryngotomy having been performed. Apart from internal surgical procedures there has been no great tendency shown towards attempts to radical treatment, as those who are familiar with the subject would anticipate.

In no branch of laryngeal surgery has the surgeon met with greater difficulty than in those which are associated with laryngeal stenosis, whether as the result of acute mischief or chronic affection of the organ. Fortunately, there are not so many cases of these in our clinics, thanks to the care which is now exercised in the treatment of laryngeal affections generally. Nevertheless, everyone who has had to deal with such cases will appreciate the contributions to the surgical treatment of laryngeal stenosis by Professor E. von Navratil and Drs. Sargnon and Barlatier (JOURN. OF LARYNGOL., RHINOL., AND OTOL., for May, July, and August, 1908). The success of the measures suggested depends upon the severity of the lesions, but no one can doubt that not only have these authors drawn the attention of the profession to the possibility of relieving such patients but their reports and results are extremely satisfactory.

Nervous affections of the larynx have attracted a considerable amount of attention during the past year, and the literature on the subject has been enriched by the work of Dr. A. Onodi, of Budapest, "Das Gehirn und die Nebenhöhlen der Nase." An excellent discussion took place at the meeting of the American Laryngological Association upon recurrent and abductor paralyses of the larynx. Dr. Joseph Gleitsmann gave an excellent *resumé* on the anatomy, physiology, pathology, and ætiology of paralyses of central origin: Dr. Bryson Delavan treated the subject from

the standpoint of aetiology, and Drs. Rice and Casselberry dwelt upon the aspects of system, aetiology, diagnosis, and treatment. The whole subject was discussed in an able manner, while the result which has been accomplished in defining our knowledge was fully dealt with. The difficulties in arriving at a solution of many important points were by no means forgotten.

The difficult question of papilloma of the larynx in children has again been raised by Dr. Payson Clark at a meeting of the American Laryngological Association. Many cases have been reported during the year, bearing upon the difficulties and dangers met with in such conditions, and the writer referred to has carefully reviewed the chances of removal through the mouth, as well as the need for intubation or tracheotomy. The possibility of obviating such difficulties by means of direct illumination or operation was also carefully considered, and it is to be hoped that familiarity with this method will do much to bring about more successful results in the future.

### RETROSPECT OF RHINOLOGY.

JUDGING from the enormous amount of rhinological literature which has been published during the past year, there is evidently no abatement of interest in the study of diseases of the nose.

During the past twenty to twenty-five years rhinology has made enormous strides, with corresponding benefit to those who are unfortunate enough to suffer from lesions of the upper respiratory passages.

At the Sheffield Meeting of the British Medical Association, Dr. Barry Ball, in introducing the discussion upon "Chronic Inflammation of the Pharynx and Naso-pharynx," pointed out, however, that too much should not be expected as the result of operative interference, particularly in cases of post-nasal adenoid operations, as it was by no means uncommon for nasal breathing not to be perfectly re-established, and for affections of the middle ear not to entirely clear up. Such a warning comes none too soon, as the general public, and, for that part, some medical men too, are apt to look for a complete recovery of nasal and aural symptoms as the result of operative removal of post-nasal adenoids.

In the same address Dr. Ball made some trite remarks upon the value of breathing exercises. While not by any means deprecating their value, he insisted upon their employment in suitable cases



and at the proper time—a hint which might well be taken to heart by certain teachers of deportment.

The efficiency of the submucous operation for septal deflections has time after time been attested by the records of many successful cases, and the past year has been no exception to the rule.

The comparative rarity of septal hæmatoma and abscess of the septum has been emphasised by J. E. Newcombe in a paper published in the *Medical Record* of March 14, 1908. Of seventeen cases occurring in his practice, three were hæmatoma and fourteen abscesses. In eleven of the cases some form of trauma proved to have been the exciting factor, while in the other six no definite cause could be assigned. The successful treatment of severe cases of hay fever and paroxysmal coryza unfortunately still baffles the profession. E. Yonge (*Lancet*, June 13, 1908) suggests, and has practised with success, resection of the nasal nerve in a limited number of cases.

As might have been expected, the surgery of the accessory sinuses has come in for a large share of attention. The treatment of maxillary antral suppuration has undoubtedly become more successful since it has been recognised that a large percentage of cases are of nasal origin, and that efficient drainage into the corresponding nasal passage is essential. K. W. Goadby (*JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, November, 1908), in a communication upon antral (maxillary) suppuration, states that infection may occur through the alveolus without the intervention of carious or abscessed teeth. Should this statement prove to be correct, the difficulty of deciding which route, the alveolar, the inferior meatal, or the canine fossa route, to adopt in opening up and treating the existing empyema will be greater than ever. The same writer advises also the gradual immunisation of the patient by means of suitable vaccines, the original infecting organism or organisms having previously been determined by bacteriological and opsonic investigations.

In the diagnosis of suppurative affections of the frontal and ethmoidal sinuses, more and more attention is being paid to the value of skiagraphy as a means of determining not only the sinuses involved, but also the regional anatomy of the particular sinus or sinuses. While very extensive operations are at times called for in cases of pan-sinusitis (Killian, Watson Williams), the tendency to treat cases of focal and less severe infections intranasally is increasing.

The zeal and activity of the present-day rhinologist augurs well

for the still further elucidation of morbid conditions of the nasal passages and their accessory sinuses, and for their successful treatment, provided always that enthusiasm is not allowed to run away with discretion.

W. M.

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## RETROSPECT OF OTOTOLOGY, 1908.<sup>1</sup>

BY DR. DAN MCKENZIE.

AMONG the more interesting incidents of the year may be mentioned the meeting of the British Medical Association at Sheffield. A discussion on intra-cranial complications, etc., was introduced by Messrs. Ballance and Whitehead (545). The Presidential Address by Dr. Peter McBride (98) on the opening of the Otological Section of the Royal Society of Medicine contained some very valuable suggestions, and the work of the Section has kept up to the high standard maintained by the Otological Society, of which it is the successor.

**AURICLE.**—A case of hyperplasia, possibly of eczematous origin, was shown at the Otological Section of the Royal Society of Medicine by Dr. Furniss Potter (332), and Dr. Pasquier, at a meeting of the Parisian Society of Laryngology, Rhinology, and Otology, reported a case of what seemed to be botryomycosis of the auricle (567). The function of the appendage as a conductor of sound-waves has been discussed by Dr. Geigel (128).

**EXTERNAL AUDITORY MEATUS.**—An uncommon case was described by Mr. Fagge, at a meeting of the Otological Section, in his report of a branchial sinus excised by him, which led from the neck into the external auditory meatus (198). Deep ulceration of the external meatus due to secondary syphilis, combined with purulent otitis media, was reported by Dr. A. Bronner at the same meeting (197), and Dr. W. H. Kelson showed a case of stenosis of the right meatus, the causation of which was somewhat doubtful (111). Dr. Cobb has drawn attention to the well-known danger to the ear as a result of swimming (707). Dr. Gaudier, investigating the effects of the Bier treatment upon diseases of the ear, has come to the generally accepted conclusion that while benefit accrues from the use of the treatment in furunculosis, in otitis media and mastoiditis, on the other hand, it is valueless (526).

**MIDDLE EAR, MEMBRANE AND OSSICLES.**—Mr. Macleod Yearsley has related a case in which a small grass seed became embedded in

<sup>1</sup> The numbers in brackets indicate the pages in the volume for 1908.

the membrane (103), and Dr. Milligan an epithelioma of the middle ear which was attributed to an injury (199).

ACUTE OTITIS MEDIA, due to pneumococcal infection, was the subject of an article by Mr. W. H. Browne, in which he advised the careful cleansing of the mouth and throat as a prophylactic measure, and the free opening up of the eustachian tube when infection has once obtained a hold (275). At the French Congress of Laryngology, Rhinology, and Otology, Dr. Lermoyez inveighed against the method of treating acute otitis media by syringing, inflation, and antiseptic drops, and in their place advised the free opening of the membrane, followed by the insertion of a tampon of aseptic gauze, and the protection of the ear from the external air (422). An advanced position is taken up by Dr. Henry Caboché, who pleads for early antrotomy in what he terms the latent form of acute suppuration of the middle ear, which manifests neither pyrexia nor tenderness over the mastoid, but only bulging of the postero-superior quadrant of the membrane with purulent discharge (453).

OTO-SCLEROSIS has again formed the theme of several contributions to otology during the past year. At the French Congress Dr. Cornet expressed himself as of opinion that the aetiology of the disease is auto-intoxication in the great majority of cases (424); and Dr. Brühl, at a meeting of the German Otological Society, exhibited some microscopical specimens illustrating sclerotic pathological changes (433). "The Anatomical Condition of the Foot-plate of the Stapes in Oto-sclerosis" was the title of a paper read before the same Society by Professor Politzer, in which he showed that oto-sclerosis consists, not in a change of the normal bony tissue in the labyrinthine capsule, but in a real new formation which displaces the normal bone, and often proliferates over the surface of the capsule of the labyrinth. He has never found, in his histological examination of the typical form of the disease, the slightest change in the mucous membrane of the middle ear or in its periosteal layers (436). At the same meeting Dr. E. Bloch reported a case of "Hyperostosis of the Labyrinth Capsule," in the causation of which heredity seemed to have played a part (437).

CHRONIC SUPPURATION OF THE MIDDLE EAR.—An important addition to our knowledge of the clinical pathology of aural discharges was made by Dr. Wyatt Wingrave in a paper read before the Otological Section (302), in which he summarised the results of investigations carried on assiduously by him over a number of years. The reading of the paper occasioned an interesting discussion in which Drs. Jobson Horne, Milligan, and others participated, and at a

later meeting the subject was continued and extended by Mr. John M. Darling (504). In connection with the causation of chronic aural suppuration, Dr. F. P. Emerson has called attention to "Rosenmüller's Fossæ and their Importance in Relation to the Middle Ear" (399). The association of chronic suppuration of the middle ear with optic neuritis and retinal changes has been further investigated by Drs. Stoddart Barr and Rowan (174), and the first-named observer, in a paper read before the British Medical Association at Sheffield, described the production of paralysis of the sixth cranial nerve by lesions consequent upon purulent disease limited to the temporal bone (553). Dr. Luc, at a meeting of the Parisian Society of Laryngology, etc., detailed a case (similar to that which formed the text for Dr. Stoddart Barr's remarks) of acute mastoiditis with paralysis of the sixth nerve in a diabetic, in which both the suppuration and the paralysis were cured by the radical mastoid operation (51). The German Otological Society, meeting at Heidelberg, like the British Medical Association Meeting in 1907, devoted considerable time to papers (read by Dr. O. Körner and Professor Scheibe) on the "Conservative Treatment of Chronic Middle-ear Suppuration" (426). Some difference of opinion was manifested by the authors, but both agreed that mastoid operations should not be performed save when the symptoms clearly point to the necessity for operative interference. A curious case has been recorded by Dr. V. Urbantschitsch, in which disturbances of speech and writing with paresis of the upper and lower extremities disappeared after the cure of cholesteatomatous disease of the middle ear by operation. The presence of the nerve symptoms was ascribed to reflex irritation (278).

**FACIAL PARALYSIS.**—Dr. Ferdinand Alt, speaking on the "Operative Treatment of Otogenic Facial Paralysis," at the German Otological Society, reported the restoration of the function of the nerve after four years, by clearing the nerve-trunk of granulations and scar-tissue, in a case in which paralysis had followed the radical mastoid operation (438).

**MASTOID DISEASES.**—The treatment of mastoiditis in diabetics formed the topic of a discussion in the Parisian Society, in which Drs. Furet, Luc, and others took part. It was shown that while coma and death followed the operation in some cases, on the whole the results were not unfavourable. Local anaesthesia was preferred. (50). According to Dr. J. D. Richards, who raised the same subject in an article entitled "Mastoiditis Occurring in Diabetic Subjects," the prognosis depends little upon the amount of sugar

in the urine and much on the rapidity of the operator (278). Af. Forselles, writing on the early diagnosis of mastoiditis, supports the method introduced by Hammerschlag of estimating the specific gravity of the aural discharge, by adding a drop of the discharge to a mixture of chloroform and benzole (276), and adding chloroform or benzole till the drop remains stationary. The specific gravity of the mixture is then taken. [The value of this method has been disputed by Tetens Hald.—D.G.] Dr. J. E. Sheppard, in the course of a symposium on hysteria of the ear, at the American Laryngological, Rhinological, and Otological Society, devoted himself to the discussion of hysterical simulation of mastoiditis (59). At the French Congress, Dr. Luc described "A New Method of Diagnosing and Treating Periostitis of the Temporal Bone due to Aural Disease," when there is no suppuration of the mastoid (423).

MASTOID OPERATIONS.—Dr. J. Stoddart Barr, in a paper read before the Otological Section, details a modified method of grafting the mastoid wound which he has found useful. The grafts are cut under local anæsthesia and blown on to the granulating bone surface by means of a glass tube. At the same meeting Dr. Logan Turner exhibited several cases illustrative of the modified mastoid operation, and Dr. W. G. Porter related the course of events in a case in which, owing to a rapid new formation of bone after the radical mastoid, the parts became stenosed and they had to be opened up again (491). The discussion which arose out of these papers proves instructive reading, since it presents the practice of several well-known authorities upon details of the mastoid operation. Professor Hartmann has invented a method of closing mastoid fistule by displacing the auricle upwards and backwards into what the author considers to be its normal position (440). Dr. G. A. Leland has published a method of employing a periosteal flap, cut from the mastoid process, in order to obliterate the excavation in the bone (525); and what promises to be a useful syringe has been invented by Dr. Urban Pritchard for the purpose of washing out the mastoid wound through the meatus (495).

THE LABYRINTH.—During the year 1908 the subject of suppurative labyrinthitis has come more and more into prominence as a consequence of modern work on the pathology and operative treatment of the disease, and the evidence of this activity is seen in the many important articles which have appeared in this JOURNAL. Beginning with the diagnosis, we find Dr. W. P. Eagleton discussing the value of von Stein's symptom in labyrinthine suppuration (63), and Mr. N. H. Pike, describing the clinical methods employed

by Bárány in testing the functional activity of the labyrinth by his rotation and caloric tests (596). The pathology and symptomatology of the disease were discussed at a debate in the American Laryngological, Rhinological, and Otological Society, under the leadership of Drs. Clarence J. Blake and Henry O. Reik (117). In cases where typical labyrinth symptoms are absent, the most reliable means for eliminating labyrinthine impairment consists in Körner's test of making the patient hop backwards, according to Krotoschiner (219). An interesting case from the physiological point of view is that described by Dr. A. Hautant, with a fistula over the external semi-circular canal, in which vestibular nystagmus could be induced by direct pressure on the fistula by a probe. The results confirmed the experiments of Ewald (565). The differential diagnosis between serous labyrinthitis occurring in purulent otitis, which runs a favourable course as regards life, and purulent labyrinthitis, which is a dangerous disease, was detailed by Dr. Voss in a paper read before the German Otological Society (435). Turning to the pathology of purulent labyrinthitis, macroscopic and microscopic specimens illustrative of the disease have been exhibited to the Otological Section by Dr. A. Gray (199), Mr. Sydney Scott (200), and Mr. Macleod Yearsley (331), and to the German Otological Society by Professor Siebenmann and Dr. Yoshii (433). Individual cases of the successful extirpation of the labyrinth for suppuration have been exhibited by Mr. Sydney Scott and Mr. Macleod Yearsley (199), and Messrs. West and Sydney Scott, in a paper read before the Section of Otology, published thirty cases of extirpation of the labyrinth with only one death directly due to the operation, and described their methods of operating. The discussion on the paper revealed the existence among the speakers of a healthy amount of caution regarding the indications for the operation (177 and 201).

The literature of the operative surgery of the internal ear has also been enriched by the addition of a case of "Ablation of the Vestibules for Vertigo," published by Dr. Gibson and Mr. Lake (496).

That a considerable amount of work has been done upon diseases of the labyrinth other than suppuration may be gathered from the following. "The Ear Symptoms in Arterio-sclerosis, with Special Reference to the Labyrinth," by Dr. J. J. Kyle (115). The cure of what may have been syphilitic deafness by iodoform pills has been reported by Mr. R. Lake (104). Mr. Alex. Tweedie and Mr. N. H. Pike, by the application of Bárány's tests in deaf-mutism and non-suppurative deafness respectively, have carefully

gathered together a series of facts which cannot but prove valuable (552, 587, 593, 596, and 656). To these may be added, "The Injury inflicted on the Labyrinth by the influence of Rays," by Dr. Marx (434); "Dilatation of the Ductus Cochlearis," by Dr. E. Rutten (434); and "The Origin of the Cells found in the Deeper Layer of the Stria Vascularis," by Dr. G. E. Shambough (278). In this connection also may be read the interesting communication by Dr. Yoshii and Professor Siebenmann upon "Experimental Injuries of the Organ of Hearing" in guinea-pigs by exposing the animals to the influence of loud sounds (433), an investigation which throws a light upon the pathogenesis of industrial deafness, and which also gives support to the Helmholtz theory. The group of symptoms which goes by the convenient name of Ménière's syndrome was made the subject of remarks by Drs. Lannois and Chavanne at the French Congress (422), and Dr. Kyle, in the article on the ear-symptoms of arterio-sclerosis, mentioned above, entered fully into the diagnosis of the disorder. Dr. H. Burger, also, has put upon record a case in which Ménière's symptoms accompanied nasal sinus suppuration and disappeared after the sinus had been operated upon (279).

**EXTRA-DURAL ABSCESS.**—Dr. Rafael Spira has recorded a case of extra-dural abscess from mastoiditis without suppuration of the middle ear (14). An instance of "Peri-sinusitis of Lateral Sinus" with latent extra-dural abscess in a man, aged sixty, has been published by Dr. Mahn (423).

**CEREBRAL AND CEREBELLAR ABSCESS.**—At the meeting of the German Otological Society Dr. Uffenorde narrated two cases of subdural abscess, one of which was combined with extra-dural and temporo-sphenoidal abscesses, and the other with meningitis which led to a fatal issue (440). Dr. E. B. Dench has published an analysis of over 200 cases of brain abscess secondary to middle-ear suppuration. In most of the cerebellar cases the route of infection lay either through the petrous portion of the temporal bone or through the lateral sinus. Recovery took place in 33 out of 102 cases. In the 100 cases of cerebral abscess, infection travelled most usually through the tegmen tympani, and 52 cases recovered after operation (275). Dr. A. Logan Turner, at the Edinburgh meeting of the Otological Section, exhibited a patient who had been successfully operated on for "Left Temporo-Sphenoidal Abscess Occurring in the Course of a Recent Middle-ear Suppuration" (486). Dr. Paul Gilbert, in remarking upon a case of temporo-sphenoidal abscess successfully operated on by him, has recom-



mended the methodical daily exploration of the cerebral wound in order to secure continuous evacuation of the contents of the abscess cavity (582). With regard to the symptomatology of the intracranial complications of middle-ear suppuration, the reader is referred to the discussion at the Sheffield meeting of the British Medical Association above mentioned, to a paper by Dr. Körner (633), in which he states that the levator palpebræ superioris and the sphincter fibres of the iris are first affected in oculo-motor paralysis, in a manner comparable with the abductor fibres in recurrent laryngeal paralysis, and to a discussion at the Parisian Society on the value of severe headache as a sign (it may be the only sign) of brain abscess (Dr. Gandier and others, 337). Dr. Knause has detailed a case in which there was mastoiditis combined with brain symptoms, which underwent disappearance after the arachnoid had been opened for drainage, although, as the autopsy showed, there was present also a considerable temporo-sphenoidal abscess (455).

**MEINGITIS.**—"A Case of Meningitis subsequent to the Mastoid Operation for Chronic Discharge of the Middle Ear in a Tuberculous Subject, Relieved and Apparently Cured by Lumbar Puncture" has been put upon record by Dr. P. Jakins (34). Dr. Claoné, in the course of a description of a case of otitic meningitis in which the classical symptoms were absent, asks how far can we rely upon the results of lumbar puncture for the diagnosis of the disease, and mentions cases recorded in the literature in which purulent collections in various regions of the cerebro-spinal system had discharged themselves into the spinal subarachnoid space (398). Mr. Sydney Scott read before the Section of Otology notes on a case of "Otitic Meningitis, with Histological Specimens of the Labyrinth, Demonstrating Streptococci *in situ*," from which he concluded that the cisternæ in meningitis should be drained through the labyrinth (522, see also 455). A suggestion on the treatment of the disease comes from Dr. Laurens, who has advised lumbar puncture and the injection of electrargol into the spinal fluid (423).

Turning to meningitis not otitic in origin, we find a case of deafness following epidemic cerebro-spinal meningitis reported by Mr. H. H. B. Cunningham (193). Purulent labyrinthitis due to epidemic cerebro-spinal meningitis supplied Dr. Ferdinand Alt with microscopic specimens exhibited to the German Otological Society. A case of serous meningo-encephalitis has been recorded by Dr. A. Blan (221).

SINUS THROMBOSIS AND AURAL PYEMIA. — Dr. Uffenorde has published a paper on "Pathological and Bacteriological Researches in a Case of Extensive Parietal Sinus Thrombosis" (442); and Dr. A. Knapp has described a case in which the organism responsible for the disease belonged to the *profetus-aërogenes* group (276). Dr. Dabney (454) and Dr. Logan Turner with Mr. Henry Wade (486), have reported cases of lateral sinus thrombosis combined with temporo-sphenoidal abscess, and Dr. Peter McBride a case of lateral sinus thrombosis along with cerebellar abscess (483). Dr. P. D. Kerrison has put upon record a case of sinus thrombosis following acute aural suppuration consequent upon diphtheria (221). Cases illustrating the successful surgical treatment of sinus infection have been reported by Dr. Dundas Grant (335), Dr. W. S. Syme (325), Dr. Logan Turner (485), Dr. J. G. Connal (343) and Dr. W. Permewan (487). Dr. Connal's case was complicated with septic abscess of the lung, and Dr. Permewan's with pneumonia and pericarditis. A contribution to the question of the treatment of the jugular vein in the operation for the cure of sinus thrombosis and pyæmia has been made by Dr. Cornet (568). The case was one of a child in which recovery followed drainage of the sinus without ligature of the jugular vein, albeit only after a protracted attack of septicæmia. The possibility of the occurrence of septic sinus thrombosis without fever is called to mind by the publication of an apyrexial case by Dr. H. Schroeder (221). Cavernous sinus thrombosis is almost invariably fatal, but a case in which recovery took place after a prolonged illness has been related by Dr. H. Bourgeois (707). Dr. Henry Hanna (364) and Dr. Stucky (529) have each recorded fatal cases.

MALIGNANT DISEASE.—Mr. Hunter Todd has published two cases of aural epithelioma, one of the auricle (113), the other beginning in the tympanum and infecting secondarily the skin over the mastoid region (113 and 112). We have already made mention of Dr. Milligan's case of epithelioma. Dr. F. R. Nager gave a detailed account to the German Society of an epithelioma of the tympanum in a youth, aged eighteen, which had supervened upon cholesteatoma, and spreading into the labyrinth at several different points had caused necrosis of the bone. The case would seem to be unique (435).

SYPHILITIC DEAFNESS.—Deafness arising from the hereditary disease formed the subject of a paper by Dr. Jules Glover, in which a case was described as one of hereditary syphilis at the second generation (398). Dealing with the same variety of the disease,

Dr. Wanner read a paper on the "Functional Examination in Cases of Congenital Syphilis" before the German Otological Society (430), and Dr. Castex, at the meeting of the French Congress, fixed the percentage of deaf-mutism due to syphilis as low as  $2\frac{1}{2}$  (424). Arising out of the case of sudden deafness reported by Mr. Lake (see above), a discussion, in which considerable divergence of opinion was displayed, took place at the Otological Section on the important question, raised by Dr. A. Bronner, as to whether syphilis was a common cause of deafness (106).

MISCELLANEOUS.—We owe to Mr. Thomas Guthrie the elucidation of some points in the development of the middle ear and its contents (541). Drs. K. L. Schaeffer and H. Sessions have written "On the Importance of the Middle-ear Apparatus for the Hearing, Especially of the Lowest Notes" (429). Additional work upon the physiology of audition has been done by Dr. W. Sohler Bryant, who discusses and dismisses as without foundation Helmholtz's "piano-string" theory (455); by Dr. Hegener, upon the methods of estimating the upper tone-limit (428); and by Dr. F. Putelli (223), who, in a paper on the hearing of railway employees, has expressed the opinion that the whispered voice is the most convenient acoumeter. Dr. Robert Bárány has invented a noise-producing apparatus for annulling the sensitiveness of the sound ear while testing the other for unilateral deafness (363, 428).

Herpetic inflammations of the geniculate ganglion of the seventh cranial nerve and herpes of the ear and adjoining regions formed the basis of an article by Dr. J. R. Hunt (173), and the same author has stated his belief that some cases of otalgia should be referred to the sensory portion of the nerve (277).

We have already alluded to a discussion in the American Laryngological, etc., Society on "Hysterical Affections of the Ear and Mastoid," and a case of unilateral hysterical nerve-deafness exhibited by Dr. Dundas Grant gave rise to a similar discussion in the Section of Otology, in which Dr. Purves Stewart and others took part (329). At the same meeting Dr. Dundas Grant showed a case of unilateral nerve-deafness, where the defect was probably due to an organic lesion of the auditory nerve (329). The diagnosis of tumours of the auditory nerve was discussed in an article by Dr. W. Kustner (174), and Dr. Manasse showed to the German Society specimens of exostoses of both internal auditory meatus from a female, aged eighty-three (437).

A hitherto overlooked cause of deafness, and in young children of deaf-mutism, has received attention from Professor Siebenmann

in an important paper entitled, "On Deafness Arising in the Course of Acute Osteomyelitis and Septic Processes in General" (222).

Regarding the treatment of deafness, several points fall to be noticed. Dr. W. Sohler Bryant has reported two cases of chronic catarrh of the middle ear in which improvement in the hearing followed the mastoid operation for acute mastoiditis (164); and the same author, discussing "Chronic Middle-ear Deafness" from all causes, catarrhal and suppurative, analyses the production of the defect, and details a number of cases where improvement in hearing power resulted from the careful treatment of each case upon its merits (133). Dr. Ernst Urbantschitsch has recommended galvanism in the treatment of deafness (443), and Dr. Blodgett warms the air in a politzer bag by an electrical attachment before inflating and catheterising (454). Mr. C. Cresswell Baber has described a megaphone for use in chronic deafness. We may also mention here the salpingoscope, with an arrangement for catheterisation and the passage of Eustachian bougies, invented by Dr. Voss (441).

Two out-of-the-way cases have been recorded, one by Piff (454), in which a piece of grass obtained an entrance to the Eustachian tube and set up widespread suppuration from which the patient died; and the other by Dr. W. S. Syme, in which a Bezold abscess discharged into the pharynx (327).

In continuation of his exhibitions of temporal bones, Mr. Cheatle showed to the Section of Otology nine specimens of fracture of the skull through the temporal bone, and the discussion which followed was enriched by the remarks of Mr. L. B. Rawling, who has paid particular attention to the subject (107).

REVIEWS.—The following works on otology have been reviewed in the JOURNAL during the year 1908: "Beiträge zur Anatomie, Physiologie, Pathologie, und Therapie des Ohres, der Nase, und des Kehlkopfes," by Drs. Passow and Schaeffer (283); "Diagnosis in Disease of the Throat, Nose, and Ear," by Dr. Dan McKenzie (226); "Diseases of the Ear, Nose, and Throat," by Dr. John Johnson Kyle (528); "Maladies de la Gorge, du Larynx, des Oreilles, et du Nez," by Drs. B. J. Moure and A. Brindel (456); "The Topographical Surgical Anatomy of the Mastoid Region," by Dr. H. E. Kanasugi (640); "Handbook of Otology" (English translation), by Profs. Bezold and Siebenmann (280).

## A CASE OF ACUTE MIDDLE-EAR SUPPURATION AND MASTOIDITIS WITH SOME UNUSUAL SYMPTOMS.

By J. S. FRASER, M.B., F.R.C.S.ED.,

Assistant Surgeon Ear and Throat Department, Royal Infirmary, Edinburgh ;  
Lecturer on Diseases of the Nose, Throat and Ear, Surgeons'  
Hall, Edinburgh.

THE patient was a medical graduate, aged thirty, of somewhat neurotic temperament; some years previously he had suffered from septicæmia, and, though the pulse was slow and regular, a pre-systolic mitral murmur could be heard on auscultation. For some months before the present illness the patient had been in bad health, and greatly troubled by dyspepsia. He had been engaged in the study of oto-laryngology for the last two years. In August of this year the inferior turbinals were cauterised, as the patient complained of remittent nasal obstruction, due to vascular engorgement.

On September 12, whilst bathing in the public salt-water baths he got some water into his nose and mouth during a long dive. On blowing his nose he felt some of the fluid pass into his right ear. There was no pain during the rest of this day nor at night, but on the 13th there was slight discomfort in the daytime and at night marked otalgia. Next day the pain increased, and the tympanic membrane was seen to be red and to have lost its polish; that night the temperature rose to  $101.8^{\circ}$  F., and in spite of cocaine and carbolic glycerine drops the patient had a bad night; there was no mastoid tenderness at this time. On September 15 there was a bluish bleb on the posterior wall of the bony meatus; mastoid tenderness was present, especially on pressure, at the tip and over the antrum; the patient left work and went to bed. The pain in the ear continued, and at night, in spite of morphia, he only slept for two hours.

September 16.—Severe throbbing pain in right ear, tympanic membrane seen to be bulging; patient admitted to hospital. Paracentesis of right tympanic membrane, under local anaesthesia by Dr. Logan Turner; morphia (gr.  $\frac{1}{3}$ ) hypodermically. Temperature  $100.6^{\circ}$  F. on admission.

September 17.—Patient much better, no pain; profuse discharge from right ear of serum slightly tinged with blood; mastoid tenderness practically disappeared. Aural syringing every two hours.

September 18.—Otalgia returned; mastoid tenderness over tip and antrum. Veronal (gr. xv) at night; slept four hours.

September 19.—Severe throbbing pain all over right side of head and face; discharge slightly more purulent; marked mastoid tenderness. After carefully syringing and drying the meatus cover-glass films were made from the pus obtained from the perforation by means of a sterile platinum loop. Report: Films show numerous ovoid and round Gram-positive cocci in pairs, and less frequently in short chains; no other bacteria. Stroke cultures on Loeffler's serum (made after again sterilising the needle) yielded a pure growth of *Streptococcus brevis*. Temperature at 8 p.m., 100·4° F.

September 20.—Patient reported a bad night; pain and tenderness increased. In the absence of Dr. Logan Turner the writer performed the operation at 3.30 p.m.; chloroform. Incision in retro-auricular groove. Mastoid cortex appeared more red than normal, and on using the gouge there was considerable bleeding from the congested bone; the cortex consisted of small pneumatic cells and diploë. Pus was not reached till the antrum was opened, when a drop or two escaped under slight pressure; the antrum was small and deep. (Bacteriology: pure culture of *Streptococcus pyogenes*.) The mastoid cortex and external wall of the antrum were freely removed, but as the cells exposed contained no pus and were merely congested the tip was not removed. A free incision was made in the tympanic membrane through an aural speculum, but there was no escape of pus. The large bony cavity was cleaned out with peroxide solution and lightly packed with iodoform worsted. The patient had a fairly good night after the operation.

September 21.—Patient complained of a good deal of pain; external dressings changed; temperature 100° F. at 8 p.m.

September 22.—Wound dressed; meatal packing removed almost dry; little reaction about bony cavity.

September 23.—Pain continues. Blood-count gives following result: white cells 9700; polymorphs 78 per cent.; large mononuclear 20 per cent.; small mononuclear 2 per cent. Iodine reaction negative. Temperature 99·6° F. at 8 p.m.

September 24.—Ten c.c. of anti-streptococcus serum injected into cellular tissue of right lumbar region. Wound dressed; granulations beginning to form; slight formation of pus; some tenderness on pressure over posterior border of mastoid.

September 25–30.—Pain in right ear continues severe—worse

at night: pain shoots up to vertex and also over distribution of fifth right cranial nerve. Wound dressed daily; meatal packing dry; fairly copious purulent discharge from mastoid cavity; pus oozes out of aditus when patient performs Valsalva's experiment. Tenderness on pressure at mastoid tip and over posterior border, but no pain on tapping the bone exposed in posterior wall or floor of the cavity.

October 1-4.—(Edema noticed over posterior edge of mastoid wound; during next three days this continued and spread up over temporal and parietal region on the right side almost to the vertex.

October 5.—Urticarial eruption appeared, especially marked on flexor aspects; the rash was raised, papular, with a somewhat flattened top, and there was marked redness around; the rash was very irritable and came out in patches and disappeared again very quickly; œdema over mastoid continues; the wound cavity shows copious granulation tissue formation. Blood-count: White cells 7100; polymorphs 73 per cent.; iodine reaction negative. Temperature 100.2° F. at 8 p.m.

October 6-7.—Patient has less pain during the day and sleeps somewhat better at night; wound dressed daily. No pus now exudes from aditus on Valsalva's experiment, but patient feels air enter the tympanic cavity; mastoid œdema disappearing.

October 8.—At 3 p.m. the upper lip suddenly swelled up, and this condition lasted till the following morning.

October 9.—Granulations in wound cavity tend to unite in spite of packing; tympanic membrane healed, but still red and thickened; malleus not visible. Whispered speech heard by right ear at six inches, ordinary voice at two yards. Edema over mastoid greatly diminished; tip and zygoma now free. Tenderness on pressure also considerably less. Blood-count: White cells 5700; polymorphs 77 per cent.

October 12.—Whisper right ear at two yards. Mastoid œdema entirely disappeared; temperature normal; still slight tenderness at tip of mastoid and along posterior border.

October 14.—Local anæsthesia with patient in recumbent position; cocaine (mixture of  $\frac{1}{2}$  per cent. solution, with mv of adrenalin chloride 1 in 1000) injected under edges of the wound. Immediately afterwards, and before any incision had been made, the patient became very pale, vomited, and complained of severe cardiac pain; the pulse was rapid and feeble; great dyspnoea was present, and the patient broke out into a "cold" perspiration. This condition lasted for ten minutes in spite of sal volatilë, fresh air, etc. When



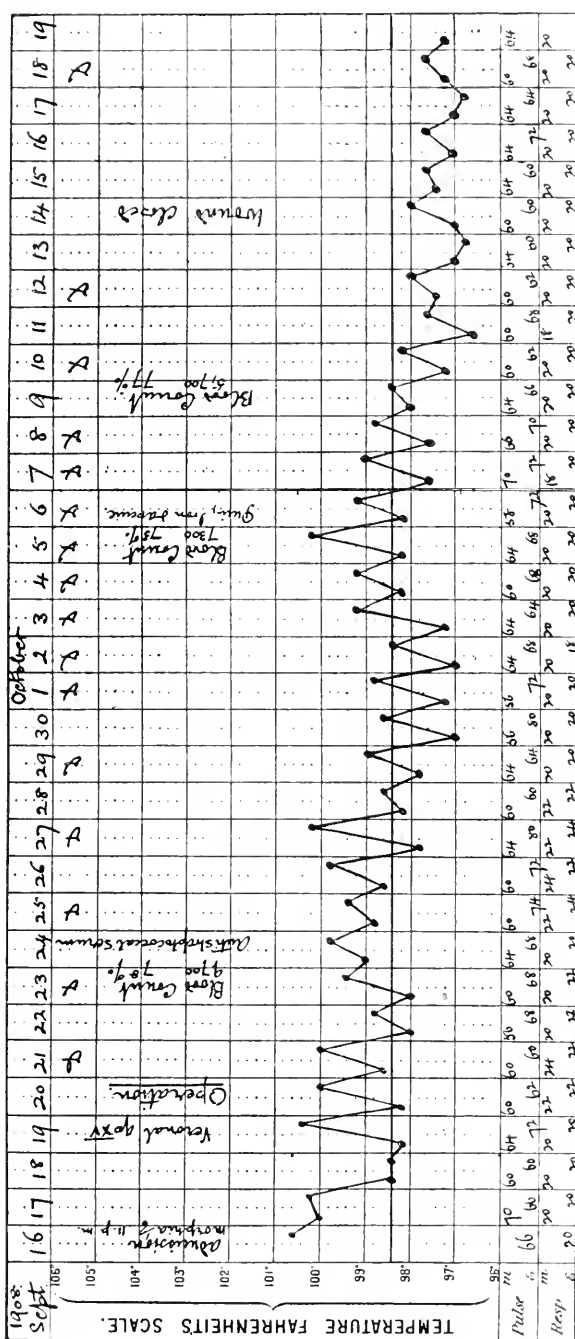


Chart of temperature, etc., to illustrate Dr. Fraser's case of acute middle-ear suppuration and mastoiditis with some unusual symptoms.

patient had recovered the edges of the wound were undermined, freshened, and united.

Thereafter there was nothing of importance to note; within five days the wound had firmly healed, leaving only a linear scar; the hearing had returned almost to normal, and by the end of October had become quite normal.

#### REMARKS.

The case presents several points of interest—the previous history of septicæmia and heart trouble, the neurotic condition, and the knowledge of otology. The origin of the otitis media was, of course, a not uncommon one. As regards the bacteriology it is evident that the same organism appeared as diplococci as short chains and, in the cultures from the antral pus, in the longer chains characteristic of *Streptococcus pyogenes*. At the operation it was somewhat surprising not to find more evidence of bone disease—in fact, at the end of the operation I was by no means sure that I had been justified in carrying out the Schwartze procedure. No great improvement followed the drainage of the posterior end of the middle-ear cleft and the second free paracentesis, for the pain continued and the temperature remained elevated. It should be mentioned that the patient has, as a rule, a subnormal temperature and a slow pulse, as will be seen from the chart from October 11 to 19. The patient was troubled by dyspepsia and constipation during the first three weeks of his illness. The most interesting feature in the case was the persistence of mastoid tenderness after the operation and the onset of œdema on October 1. I do not think that this had any connection with the injection of anti-streptococcus serum, as an interval of a week elapsed between the two events. The injection was not repeated as it appeared to be of no benefit. The area of œdema followed very closely that of the distribution of the small occipital nerve, and, taken in conjunction with the urticarial rash which appeared on October 5 and the swelling of the upper lip on October 9, I think that the œdema of the mastoid and parietal region cannot be looked upon as a sign of phlebitis of the small veins of the mastoid or of sinus involvement. The tenderness was not increased by deep pressure over the region involved. Further, the bone exposed in the posterior wall of the mastoid cavity was normal in appearance and not tender on tapping. The granulations which sprang up were healthy in appearance. The early cessation of otorrhœa and

improvement in the hearing were also against any serious complication. It is quite possible that streptococcal infection of the edges of the wound in the soft tissues may have been the cause of the œdema, but, if so, one would have expected this œdema to occur at a shorter interval than ten days after the operation and to have affected the anterior as well as the posterior and lower edges of the wound; further, this explanation does not account for the urticarial rash and the œdema of the upper lip. Finally, the blood-count was not in favour of any continuation of the inflammatory process; this showed a moderate degree of leucocytosis two days after the operation, and the percentage of polymorphs was not above what one would expect; the further examination on October 5 and 9 were confirmatory of the improvement in the patient's condition. Had it not been for the valuable aid given by this method of examination together with the knowledge of the previous history and general condition of the patient a further operation would almost certainly have been performed in the beginning of October. The reaction of the patient to such a small dose of cocaine (about gr.  $\frac{1}{4}$ ) and adrenalin may of course have been due to idiosyncrasy, but I think that the neurotic element was not altogether absent here.

I am indebted to Dr. Logan Turner for his advice and help on many occasions as well as for permission to record the case, to Dr. John Darling for his kindness in making the blood examinations, and to Dr. W. T. Ritchie for the bacteriological reports.

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### A CAP FOR DRESSING MASTOID CASES.

BY J. S. FRASER, M.B., F.R.C.S.ED.,

Assistant Surgeon Ear and Throat Department, Royal Infirmary, Edinburgh.

MORE than two years ago I came to the conclusion that the ordinary method of dressing a case after the radical mastoid operation left much to be desired. The gauze strips used in packing the cavity trailed over the patient's neck and auricle before being inserted into their proper position; further, it was impossible to steady or manipulate the patient's head without infecting the left hand of the aural surgeon. To obviate these difficulties I devised the ear-cap shown in the illustration. This cap is merely a loose linen cap—something like a baker's cap—with the addition of a strip of material on one side in which a hole is cut sufficiently large

to allow the auricle to pass through. The cap is made large, but can be adjusted by means of tapes, which run in the band round the head, so as to fit almost any size of head. The ear-hole is cut in the flap just at the point of junction with the headpiece, and, if this hole be made slightly larger, the cap may be used during the mastoid operation and also in the dressing of cases after the Schwartz operation. The large bell-mouthed speculum shown in the illustration projects beyond the level of the auricle, so that gauze packing may be introduced into the enlarged middle-ear cavity without touching the meatus or lobule and other parts of the auricle.

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## SOCIETIES' PROCEEDINGS.

### PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

*Friday, December 4, 1908.*

DR. WATSON WILLIAMS, *Vice-President, in the Chair.*

*Abstract of Proceedings by* DR. DAN MCKENZIE.

The following cases and specimens were shown :

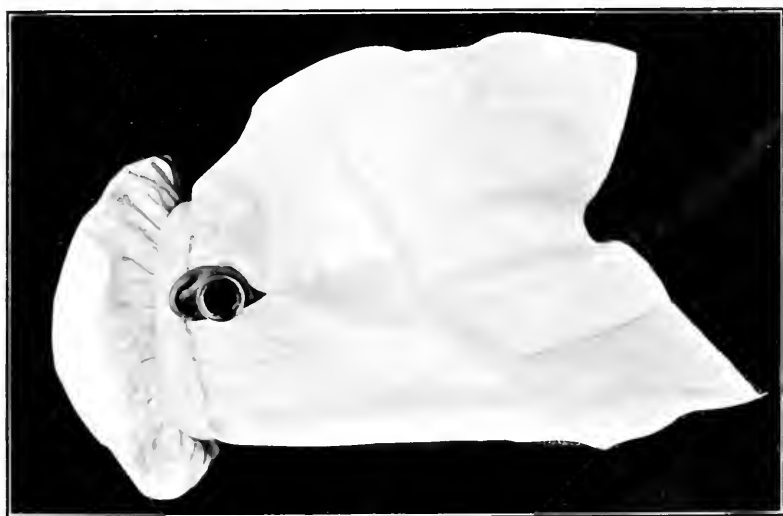
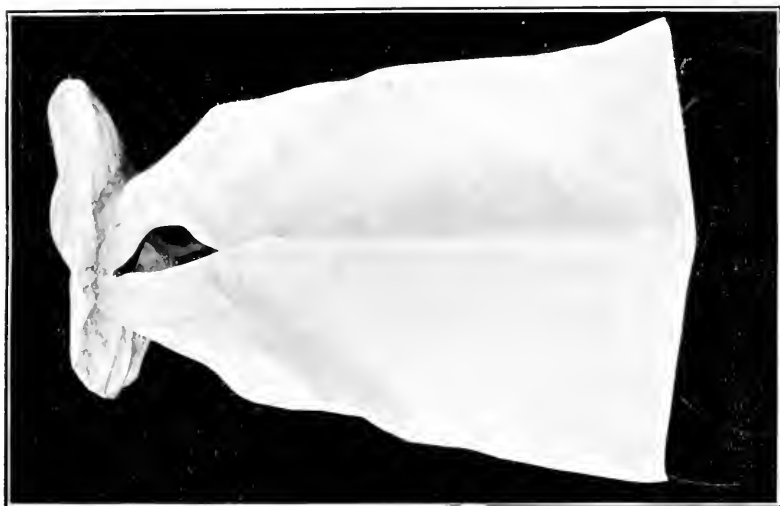
CASE OF IMMOBILITY OF THE LEFT VOCAL CORD IN A MALE PATIENT,  
AGED SIXTEEN.

BY DR. DUNDAS GRANT.

The voice had been weak and hoarse for about two years. When seen a month ago the left vocal cord was found to be immobile in the cadaveric position. A chain of enlarged glands was pressing along the anterior border of the sterno-mastoid. Clinical examination was negative, and there had not been an opportunity of making a radioscopic examination.

DR. JOHNSON HORNE doubted whether the immobility was due to recurrent paralysis. It might possibly be due to injury received in days gone by, as in a case he had seen. The enlarged glands, he thought, had no connection with the laryngeal condition.

DR. BARRY BALL looked upon the case as paralysis of the left vocal cord, and the presence of enlarged glands in the neck justified the sus-



TO ILLUSTRATE MR. J. S. FRASER'S CAP FOR DRESSING MASTOID CASES.



picion of enlarged glands deep in the neck or within the chest as the cause of the paralysis.

Mr. STEWARD questioned whether the tumour in the neck was an enlarged lymphatic gland. He had recently seen a case of a woman with supposed glandular enlargement in the left side of the neck, in whom operation was followed by paralysis of the left cord. On microscopical examination the supposed gland turned out to be a neurofibroma, probably attached to the recurrent laryngeal or to the vagus. He suggested that the lump in this case might be something of the same kind.

The CHAIRMAN remarked upon the difficulty of explaining many of these laryngeal paralyses.

CASE OF EXTENSIVE INTRINSIC EPITHELIOMA OF THE LARYNX IN A  
MALE VOICE-USER, AGED SIXTY-TWO,

BY DR. DUNDAS GRANT.

Commenced with hoarseness, gradual increase during two years; occasional pain left side of neck. Pale, papillated ulcer occupying the greater part of an area of infiltration involving the left vocal cord and ventricular band. Edges slightly everted, areola of congestion. Left half of larynx immobile, right half practically normal. No spreading of the thyroid cartilage, no glandular enlargement. Diagnosis founded on inspection only. No removal of fragment for microscopy had been made. Progress probably very slow. Suggestions as to treatment were requested.

Mr. DE SANTI agreed with the diagnosis of epithelioma. To all appearance the case seemed suitable for hemi-laryngectomy, but on opening the larynx one might find the disease more extensive than it appeared to be, and in that case a total laryngectomy would be called for. The patient should be warned of this risk before the operation. The absence of secondary glandular enlargement, the mobility of the unaffected side, and the healthy appearance of the patient would justify operation.

The CHAIRMAN'S opinion on the point of the treatment coincided with the last speaker's. It was a suitable case for hemi-laryngectomy, or for total extirpation if the complete operation was called for.

STENOSIS OF LARYNX IN A CHILD.

BY DR. T. JEFFERSON FAULDER.

Opinions were requested on treatment.

Mr. CRESSWELL BABER said that if it was impossible to find a passage through the larynx which could be dilated, laryngo-fissure should be performed and the cicatricial tissue cleared out.

Mr. HERBERT TILLEY alluded to a method of dealing with these trying cases, which had recently appeared in the JOURNAL OF LARYNGOL., RHINOL., AND OTOL.,<sup>1</sup> and which had been devised by two French authors (Drs.

<sup>1</sup> July, August, and September, 1908, pp. 365 *et seq.*

Sargnon and Barlatier). The speaker had recently adopted the method in a case under his care, in which he had first dilated the stricture with Lister's urethral bougies. The method consisted in splitting the thyroid and the whole trachea and suturing the skin to the mucous membrane of the trachea, etc. This done, a rubber tube was inserted into the gutter, and its upper end plugged with gauze to prevent food, etc., from passing down. The elastic pressure of the tube caused an absorption of the scar tissue. The dressings were changed three times a day and chloroform was necessary for the dressing. It was difficult to keep the wound aseptic. The tube should be left *in situ* for three to twelve months and the records of these cases were good, although the treatment was very tedious. The method might be tried in this case, because the mere removal of the scar tissue was insufficient to prevent a recurrence of the contraction.

Dr. WM. HILL showed an angular dilator which he fixed in the thyroid after laryngo-fissure, and fastened by tying round the neck, in order to keep the thyroid open, as he had done in the case he was exhibiting now (see later).

Mr. TILLEY remarked that in children such an instrument would be of little service, since the obstruction was more in the cricoid than in the thyroid. He recalled a case he had seen in the diphtheria ward in St. Thomas's Hospital some years ago, where tracheotomy had been done and the tube had been worn for a year. A celluloid catheter was passed through the obstruction, fixed to the ear, and worn for a year, and the case did very well.

Mr. LAMBERT LACK had seen many of these cases. Most of them were due to the fact that the original operation was not a tracheotomy, but a laryngotomy, either through the cricoid or through the thyroid. The irritation of the laryngeal tissues by the tube initiated the formation of scar tissue. Guided by this knowledge the plan he adopted for the cure of these cases was as follows: He opened the trachea as low as possible and replaced the tube in the low opening. The larynx was then opened, if necessary, and the scar tissue removed. He had adopted this method with success in a case of a man, aged twenty, in whom tracheotomy had been done at the age of four. At one time he had tried dilating the obstruction by means of T-shaped metal plugs, but the method he had just described had proved much more satisfactory.

Mr. STEWARD agreed with the last speaker in his views on the causation of the contraction. The operation of laryngostomy for the relief of the obstruction was very successful, but before doing an open operation proper and efficient dilatation should be assiduously persevered in. The dilatation usually employed was unsuccessful, because it was not carefully and perseveringly carried out. Under chloroform anaesthesia a silver catheter should be passed up from the tracheotomy wound through the obstruction, and the passage dilated sufficiently to permit of the insertion of the smallest size of intubation tube which would permit the patient to breathe. This should be worn constantly for some time, and then very gradually left off. He drew particular attention to this point, and advised that the intervals during which the patient was without the tube should be very slowly lengthened. He began with five minutes in the day and worked up to one hour, and so on, but the tube was re-inserted regularly every day, every week, and then every month, etc., for years. In that way he had succeeded not only in removing the obstruction, but also in restoring the voice to a considerable extent.

Mr. J. GAY FRENCH hoped that whatever method of treatment was



tried, fibrolysin would not be forgotten. He had found this remedy of great service in the treatment of cicatricial contraction in other parts of the body.

Dr. DAN MCKENZIE said the President (who was absent) had recently treated a case of laryngeal closure in a child by Sargnon and Barlatier's method at the Central London Throat and Ear Hospital. Unfortunately the child died of pneumonia. The closure was so absolute that efforts at dilatation were impossible. Dilatation, in suitable cases, should be tried before recourse was had to the open operation.

The CHAIRMAN was in favour of intubation after the stricture had been dilated under an anæsthetic.

Dr. T. JEFFERSON FAULDER, in reply, said that he had examined the larynx in this case by the direct method, and had failed to discover a lumen in the larynx. The epiglottis and ary-epiglottic folds were normal. The patient had been attacked by diphtheria in October, 1907, and tracheotomy had been performed as an urgent measure. Later, thyrotomy had been tried, as it was found impossible to remove the tube. The child could emit sounds of a sort, although there seemed to be no air-way through the larynx. Probably the vocalisation, such as it was, was performed by the pharynx and soft palate. He suggested that in these cases the raw surface left after clearing out the scar tissue from the interior of the larynx might be Thiersch-grafted. The patient had suffered severely from bronchitis this year, and treatment was very desirable. He feared that this was a case where dilatation would be of no avail.

#### CERVICAL FISTULA IN A BOY OF DOUBTFUL NATURE.

By Dr. T. JEFFERSON FAULDER.

#### EPITHELIOMA OF PALATE IN A BOY, AGED SIXTEEN.

By Dr. J. W. BOND.

Dr. PETER MCBRIDE said he had looked forward to seeing this case, but it had evidently been operated on as there was no epithelioma evident now.

Dr. DAN MCKENZIE asked whether the diagnosis had been established satisfactorily, as there was no mention made of a microscopic examination.

Dr. PEGLER said a slide had been on exhibition, and it was undoubtedly epithelioma.

Dr. JOBSON HORNE asked that the specimen be handed to the Morbid Growths Committee in order that sections might be cut and the nature of the growth established.

Dr. J. W. BOND said that there had been some difficulty in deciding whether the tumour was endothelioma or epithelioma, but the experts had ultimately agreed that it was epithelioma. Clinically the tumour had been very hard and firmly fixed to the hard palate. It had been removed and the wound cauterised.

## FIBROMA OF NASO-PHARYNX IN A BOY, AGED SEVENTEEN.

BY DR. J. W. BOND.

Resection of jaw. (Patient and specimens exhibited.)

Mr. HERBERT TILLEY had observed the scar of the ordinary incision for removal of the upper jaw in this case, and asked whether the advisability of an incision under the upper lip had not been considered. In this way, after a preliminary laryngotomy, he had operated successfully on a similar case which he had shown at the Laryngological Society. The great advantage was thus secured of leaving no scar on the face.

Dr. J. W. BOND said that when he began the operation it promised to be easy, and after a preliminary laryngotomy he endeavoured to remove the tumour by splitting the palate. But, contrary to his hitherto invariable experience, he had failed to move the tumour, which was wedged into the posterior part of the nose and protruded but little into the nasopharynx. He then tried to dislodge the growth from the front by removing the ascending process of the superior maxilla and the anterior wall of the antrum, but this manœuvre also failed. Finally the upper jaw had to be removed, and the tumour peeled off the cribriform plate and the body of the sphenoid, which was nearly all destroyed by the tumour. It had been a very severe operation.

## A CASE OF LUPUS OF THE EPIGLOTTIS.

BY DR. JOHNSON HORNE.

The patient, a girl, aged seventeen, was brought before the Section on May 1, 1908. On that occasion there was a difference of opinions expressed by the members who took part in the discussion as to the nature of the disease. The case was shown prior to operative treatment. Since then the gross part of the disease had been removed, and in accordance with the wish expressed on the previous occasion a microscopic section of the part removed was now exhibited together with the patient, which a view of eliciting further expressions of opinion as to the nature of the disease. The patient had expressed herself as decidedly benefited by the operative treatment.

## PRIMARY TUBERCULOUS GRANULOMA OF THE TRIANGULAR CARTILAGE OF THE SEPTUM, WITH MICROSCOPIC SECTIONS OF TUMOUR.

BY DR. PEGLER.

(Patient changed her address after treatment last July, and unfortunately could not be traced.) She was a widow, aged fifty, newly-arrived German native, and presented herself at the Metro-

politan Throat Hospital complaining of nasal obstruction. Complexion fresh; well nourished; no signs of tuberculosis elsewhere. Growth formed a lobulated mass attached to, and occupying a depression in, the left side of the cartilage anteriorly, not only deflecting, but perforating it, so as to be just visible in the right fossa. The mass was light red, soft, and slightly cedematous, not ulcerated; when blanched by cocaine the lowermost lobule appeared in part almost as blue as a nevus. There was no true resemblance to either lupus, gumma, sarcoma, or malignant growth. The majority of the divisions were snared off *en masse*, the deep soft parts of the base were ennetted. Hamorrhage was very free. Pure phenol was rubbed in, and a gauze dressing applied. A clean healed surface appeared in about three weeks, with a small perforation in the centre. The microscopic sections presented a typical series of giant-cell systems, one bordering upon another. There was no true epithelial covering. Staining for tubercle had given negative results. In this latter and other respects the case was parallel with the majority of those described by F. J. Steward in "Guy's Hospital Reports," vol. liy, 1900.

Dr. JOHNSON HORNE could not make up his mind that this was tuberculosis of the septum. Not all giant-celled tumours were tuberculomata, and no bacilli had been found. It should be remembered that large numbers of cases of primary laryngeal tuberculosis were at one time reported, and he was inclined to suggest that a similar tendency prevailed at present with regard to tuberculosis of the nose.

Dr. PEGLER replied that possibly a recurrence of the disease would bring the patient back to hospital again. As regards the distinction between these tuberculous masses and lupus, he quoted from Dr. Watson Williams' book to the effect that lupus and tubercle were distinct and separate pathological entities. The section in this case did not differ microscopically from lupus, but clinically the difference between the pendulous lobules of tuberculosis and the nodular deposits of lupus was quite obvious.<sup>1</sup>

#### CASE OF SPASMODIC COUGH.

By Dr. PEGLER.

Patient was an unmarried woman, aged twenty-five; no occupation. After having long complained about her throat, she had,

<sup>1</sup> We have received a communication from Dr. Pegler to the effect that the section, which was cut at the Cancer Research Laboratories, was diagnosed by Dr. Lazarus Barlow without hesitation as a tuberculous granuloma, and Mr. Shattock, at the Royal College of Surgeons, afterwards confirmed the diagnosis. There having been no evidence of tuberculous disease elsewhere in the patient, the exhibitor concluded that the infection had probably been conveyed to the nose by the finger, and, if this were so, the term "primary" was justifiable.

last January, an attack of influenza lasting six days and complicated by a bad cough. On getting about again she noticed that the cough was followed by an involuntary spasmodic noise, which could best be described as a croak frequently reiterated. The symptom had sometimes lasted two hours at a time, or a considerable part of the night, and then been followed by great nervous prostration. If desired to cough, the involuntary croaking was set up, and the mechanism of the act in the larynx could be easily watched by aid of the laryngoscope. *Globus* and other hysterical indications were present.

Dr. DONELAN had seen many cases of true spasmodic cough following the real influenza and suggested that, in spite of the hysterical indications, the cough in this case was of influenzal origin. Many cases of spasmodic cough due to influenza were put down to whooping-cough in adults as well as in children. He advised the use of quinine internally, and the application of the Faradic current externally.

Dr. PEGLER signified his intention of adopting the treatment recommended.

#### A CASE OF OSTEO-FIBROMA OF THE MAXILLA.

BY DR. ANDREW WYLIE.

(Patient and specimen exhibited.)

The patient, a male, aged fifty-three, consulted the exhibitor on January 9, complaining of a "growth in the palate" of twenty-five years' duration. He suffered no pain and very little discomfort: in fact, he stated that beyond a certain amount of anxiety it gave him no trouble, and, having grown slowly and gradually, he had got quite used to it. Mastication and deglutition were performed without any difficulty, and with the exception of a slight "thickness" or impaired resonance his voice and articulation were normal. He had always enjoyed perfect health, and his teeth were sound. On examination, a large smooth, oval swelling was seen occupying the whole of the hard palate. It was the same colour as the surrounding mucous membrane; it was not tender to the touch, very firm in consistence, and slightly movable on steady pressure. Without employing any anæsthetic it was removed by an ordinary Wyld's polypus snare, and the stump healed rapidly. The exhibitor had waited eleven months to see whether there was any recurrence.

Dr. Wyatt Wingrave reports: "The tumour has the appearance of a new potato; it measures 5 by 2.8 cm. and weighs 13 grammes.

The cortical part, for a depth of about 5 millimètres, is firm and tough, and encloses a hard, stony core, which reaches the surface at its point of attachment. In structure the cortex is composed of densely packed white fibres mingled with elongated fusiform cells (fibroblasts). The stone-like core consists of compact bone with relatively small cancellous spaces, approaching the character of ivory or petrous bone. In nature it is evidently an osteoma growing from the periosteum of the maxilla, to which it was attached. There is no sign of any sarcomatous tendency."

The CHAIRMAN congratulated Dr. Wylie on the good result he had obtained in an interesting case.

#### A CASE OF LEFT ABDUCTOR PARALYSIS IN A WOMAN, AGED THIRTY-EIGHT.

By DR. H. J. DAVIS.

The cords showed no signs of inflammation, but the left cord was fixed in the middle line. The voice was hardly affected. There were physical signs of phthisis at the left apex. The case was either one of early tubercular laryngitis, or the paralysis was due to involvement of the recurrent laryngeal in the thorax. The exhibitor was inclined to the former view.

Dr. DONELAN said that the history of this case resembled one he had seen. The loss of voice was first observed during the course of parturition, and on examination paralysis of one cord was observed.

Mr. FURNESS POTTER regarded the immobility of the cord as due to fixation of the arytenoid cartilage. There was some swelling in the left arytenoid region, probably tuberculous in nature.

Dr. STCLAIR THOMSON said the cord was fixed, not in the middle line, but in abduction. He agreed with the last speaker that the immobility was due, not to recurrent paralysis, but to a tuberculous deposit around, and fixation of, the arytenoid cartilage. Unless the diagnosis was sure the condition in these cases should be termed "fixation" of a cord merely, and not "paralysis."

The CHAIRMAN agreed with the previous speakers. He had also observed some thickening on the outer aspect of the cricoid cartilage.

In reply, Dr. H. J. DAVIS said that when he sent in the notes to the secretaries the cord was fixed in the middle line. Now, it certainly was in the position of abduction. He agreed that the lesion present was a tuberculous perichondritis.

#### A CASE OF MALIGNANT DISEASE OF THE TONSIL.

By DR. H. J. DAVIS.

The patient was only aged forty. Symptoms of two months' duration consisted of earache and some dysphagia. The condition

at first sight appeared to be one of ordinary enlargement, and the tonsil was guillotined. The piece removed was very hard, and ulcerated posteriorly. Microscopic examination showed "typical squamous-celled epithelioma." With a laryngeal mirror fungation might be observed extending on to the lateral pharyngeal wall. Tongue free; larynx not involved; no glands. Patient had been advised to have entire growth removed by external operation.

Mr. DE SANTI agreed that the treatment suitable was removal of the growth by external operation.

#### A CASE OF CARCINOMA AND SYPHILIS OF THE LARYNX.

By DR. H. J. DAVIS.

The patient was aged forty-one. He had syphilis fifteen years ago. The only symptom of which he complained was cough, but he had suffered with his throat for a long time. The interior of the larynx showed evidence of old syphilitic disease, but the right ventricular band and aryteno-epiglottidean fold were invaded by a growth different in character from the tissues in the larynx. A section of the growth showed carcinoma. The patient was willing to have the whole larynx extirpated if this was thought advisable. He was exhibited with this object in view.

Opinions regarding treatment would be welcome. The man had been attending hospital since October and was at one time thought to have signs in his chest, but this had proved to be incorrect. On two occasions specimens had been removed for the pathologist, and the second of these had been reported to be squamous epithelioma. But on potass. iodid. the local appearances were mending, and he had been averse from operative interference. If operation had to be done nothing short of complete laryngectomy would remove the whole of the disease.

Dr. LIEVEN (Aix-la-Chapelle) had seen a case at Aix like this patient. There was first of all a swelling of the arytenoid which got well under treatment. A year later he returned again with some ulceration on the site of the old trouble, and this ulcer, in spite of treatment, got worse. Finally, Moritz Schmidt reported that the ulcer was epitheliomatous. The laryngeal appearances in that case were exactly as in the case now on exhibition.

Dr. MILLIGAN advised a course of thorough anti-syphilitic treatment before proceeding to operation. Mercurial inunction and iodipin injections for fourteen days would remove the syphilitic element from the case. He did not think, so miserable would be the state of the man after operation, that extirpation was advisable. It was better to do a

tracheotomy, and to let patients with laryngeal cancer run their course in as much comfort as possible.

Dr. LIEVEN (Aix-la-Chapelle), while agreeing with the wisdom of pushing anti-syphilitic treatment, warned the Section that if an immediate effect was desired iodipin was unsuitable, since its action did not start for two or three weeks after the first injection. Potass. iodid. should be used in this case.

Mr. DE SANTI would leave the case alone as far as local treatment was concerned. If after anti-syphilitic treatment the disease proved to be cancer, he would perform tracheotomy simply, and would advise against extirpation.

The CHAIRMAN thought the patient should be left to decide for himself after the whole situation had been explained to him.

Dr. H. J. DAVIS replied that his difficulty lay in the fact that the patient had refused to make a decision, but had asked him to take the responsibility. He, himself, in spite of the adverse views expressed, was rather inclined, on account of the patient's youth, to perform extirpation if the growth did not yield to mercury and iodides.

A FEW ADDITIONAL NOTES AND A LETTER FROM PROFESSOR CHIARI,  
OF VIENNA, WITH REFERENCE TO THE CASE OF THE LADY BARITONE  
SHOWN IN FEBRUARY LAST.

BY DR. CYRIL HORSFORD.

ANOTHER CASE OF A YOUNG WOMAN WITH A BARITONE VOICE.

BY DR. F. SPICER.

Dr. HORSFORD added that since he had exhibited his case the quality of the voice had improved, and it had risen in pitch as a result of treatment directed against the laryngitis, so that the voice was now looked upon as a tenor rather than a baritone. When exhibited before the Section on the previous occasion opinions were asked as to the character of the larynx. Was it a male larynx? But no definite opinion had been forthcoming. Professor Chiari had written to him giving the dimensions of the larynx and vocal cords, and had stated that in his opinion the larynx was male in type. The diameter of the larynx was greater and the cords broader, but not longer, than in the female type. With this explanation Dr. Horsford disagreed. He looked upon the baritone voice as the result of chronic laryngitis. Since her appearance before the Section the subject had been examined by a gynæcologist, who reported that externally and internally the genital organs were typically female. The speaker looked upon the "baritone" voice as due to a forcing of the deep chest notes of a contralto.

Dr. DAN McKENZIE thought there was no need to assume chronic laryngitis to be the cause of a deep or baritone voice in certain females. These secondary sexual abnormalities were by no means rare. There were effeminate men and masculine women. Among the sexual abnormalities not infrequently found in women was the development of hair on the face. The male larynx might be classed with these other abnormalities of subsidiary sexual qualities, and now that attention had been directed to this particular form he was sure many more cases would be discovered. The aetiology of these conditions had interested the members of other Sections of the Royal Society of Medicine, and the speaker believed that the theory at present adopted was, that some vestige of the opposite sex had fully developed in the mature sexual gland, and by its internal secretion induced the development of qualities which usually pertained to the other sex. No gynaecologist would be in a position to state that this person had no trace of testicular internal secretion.

Dr. JOBSON HORNE expressed his gratitude to Dr. Horsford for having helped him out of a difficulty. He had said that the larynx was a larynx *sui generis*, and Professor Chiari's letter agreed with his view. He asked what constituted a baritone voice.

Dr. PETER MCBRIDE said that a German writer had, in doubtful cases, expressed his ability to determine the sex of an individual by an X-ray examination of the larynx.

#### SKIAGRAM OF A CASE OF EMPYEMA OF THE FRONTAL SINUS.

BY MR. A. L. WHITEHEAD.

A difficulty experienced in passing the cannula far up into the sinus was clearly shown, an unsuitable curvature causing the instrument to impinge upon the posterior wall.

Dr. H. J. DAVIS congratulated Mr. Whitehead upon a splendid picture.

Dr. STCLAIR THOMSON was pleased to see the skiagram, as he had shown pictures to the Section some time ago, which had demonstrated the same error, but which had received scant respect at the hands of certain members. He emphasised what he had said at a former meeting, that only by the X rays could one be sure that a probe had entered the sinus.

The CHAIRMAN expressed his agreement with Dr. StClair Thomson.

#### SPECIMENS OF THE NASAL SEPTUM OF CERTAIN ANIMALS.

BY MR. G. SECComBE HETT.

These, in his opinion, explained some abnormalities found in man. In the dog, *e.g.* the septum normally shows a ridge or spur roofing over the inferior meatus. He suggested that the septal spur in man was a vestige of this process, normal in the dog. The specimens also showed the tonsil in all its degrees of development from a pharyngeal diverticulum up to the tonsil.



Dr. DAN MCKENZIE said that one objection to the vestigial theory of spurs was that in uncivilised races spurs and deviations were, he believed, much less common than in the highly developed white man.

#### FRONTAL SINUS IN A FEMALE PATIENT AFTER A KILLIAN OPERATION.

By Dr. STCLAIR THOMSON.

The patient suffered from suppuration in the left frontal, ethmoidal and maxillary sinuses. The maxillary cavity was drained from a tooth socket; the ethmoidal region was well cleared away at several sittings; the frontal sinus was repeatedly washed out. The sounding of the sinus was controlled by the Röntgen screen. The sphenoidal sinus was explored and found to be healthy. Owing to the persistence of headache the patient begged for a radical operation on her left frontal sinus. This was carried out on Thursday, November 19. The radiograph proved most useful by showing that the left frontal sinus crossed the middle line, and that there was an orbito-ethmoidal gallery running outwards behind the bridge. The wound healed by first intention. There was no diplopia; all headache has ceased, and there has been no discharge since the gauze drain was removed. As the maxillary suppuration persisted the alveolar plug was abandoned a week ago, and an opening made into the cavity from the nose. The case was shown to illustrate the rapid and complete relief of symptoms which was obtained in successful cases without any disfigurement.

The CHAIRMAN congratulated Dr. StClair Thomson upon an excellent æsthetic result.

#### A CASE OF WEB OF THE LARYNX WHICH HAD BEEN OPERATED ON.

By Dr. WILLIAM HILL.

Mr. FURNISS POTTER said the point of interest in the case, apart from the operation, lay in the fact that the case had been shown at the Society some time ago as a case of aphonia: no web was then seen, and the patient complained of no dyspnoea. The left cord was paralysed as a sequel to thyroidectomy, and he asked how the web had formed.

Dr. HILL, in reply, said that in the course of an operation a pair of Spencer-Wells' forceps had been attached to the cords, and this had induced the formation of the web.

#### A MALE, AGED FORTY-NINE YEARS, WITH TUBERCULAR DISEASE OF THE LARYNX.

By Dr. WILLIAM HILL.

## EPITHELIOMA OF PALATE AND FAUCES IN A MAN, AGED SIXTY-FOUR.

BY DR. JOBSON HORNE.

## A CASE OF PAPILLOMA OF THE TONSIL.

BY DR. JOBSON HORNE.

SARCOMA OF THE TONSIL AND SOFT PALATE WHICH HAD BEEN  
TREATED WITH COLEY'S FLUID.

BY MR. DE SANTI.

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 ROYAL SOCIETY OF MEDICINE—OTOLOGICAL  
SECTION.
*Saturday, December 5, 1908.**President, DR. PETER MCBRIDE, in the Chair.**Abstract report by DR. DAN MCKENZIE.*A CASE OF THROMBOSIS OF THE RIGHT LATERAL SINUS IN WHICH THE  
CLOT EXTENDED BEYOND THE TORCULAR HEROPHILI INTO THE  
LATERAL SINUS OF THE OPPOSITE SIDE; OPERATION; RECOVERY.

BY MR. A. L. WHITEHEAD.

M. L —, aged thirty-eight, was admitted under my care to the Aural Department of the General Infirmary at Leeds on September 18, 1907.

*History.*—Right otorrhœa for five years, but otherwise good health. Seven days ago felt ill and vomited. General malaise, headache, and occasional vomiting, with elevation of temperature between 100° to 101° F., persisted up to the date of admission. There were no rigors, no convulsions, no delirium, etc.

*Condition on Admission.*—A thin, delicate woman, obviously extremely ill; temperature 101° F.; pulse 108; respirations 32. Chest and abdomen healthy. Some tenderness on firm pressure over the posterior border of the right mastoid, and offensive pus in the meatus, with a perforation in the upper and posterior portion of the membrana tympani occupied by small granulations. Optic

dises congested, with slight blurring of the edges. No other abnormal physical signs. The radical mastoid operation was performed: pus, granulation tissue and carious bone were present in the antrum and mastoid cells, and the caries extended backwards, the dura mater over the lateral sinus and cerebellum being exposed and covered with granulations. The patient's condition being very bad and no rigors having occurred, nothing further was done. The pus was reported to be sterile.

During the next two days the temperature fluctuated between 97.6° and 102.2° F.

On the 21st the sinus was freely exposed and found to be thrombosed; the overlying bone was removed back to and over the torcular Herophili and the sinus laid open the whole distance; the openings of the longitudinal sinns and of the lateral sinns of the other side were blocked with firm clot, and a small enrette passed into the opposite sinus failed to set up bleeding. The internal jugular was exposed in the neck and found to be collapsed; it was tied, a portion being excised and found quite healthy.

After the operation the woman's condition was extremely critical; she appeared almost moribund, and for several days life was only maintained by nutrient and saline enemata, strychnine, etc.

During the three days following the operation a progressive œdema of the opposite side of the face set in, with puffiness of the eyelids, and the superficial veins became gradually dilated, the temporal, facial, and external jugular appearing about the size of a healthy internal jugular. There was intense headache, with a sensation of extreme tension inside the head. The eyes on both sides were markedly prominent, with retraction of the eyelids, but the conjunctivæ were not congested. There was no definite optic neuritis, but the retinal veins were much dilated.

The posterior portion of the wound was quite healthy, but pus continued to discharge from the anterior portion, and there were rigors on the 22nd, 23rd and 24th. On the 30th, although the rigors had ceased, the temperature continuing to show wide fluctuations, and the general conditions being very unsatisfactory, the jugular bulb was completely exposed and some purulent clot removed.

After this there was slow but progressive improvement, and the wound gradually and completely healed, a trace of pus continuing to be discharged from the tympanic cavity. The patient's general condition, however, remained very unsatisfactory; there was still œdema of the face and scalp, with persistent intense headache and

marked dizziness, but the superficial veins were not so conspicuously dilated as during the first two or three weeks.

Early in February of this year—that is, nearly five months after the first operation—fluctuation could be felt under the scalp, and two long incisions being made, a quantity of pus was evacuated.

Between the scalp and the bone was a mass of breaking-down granulation tissue, which was thoroughly scraped away. The abscess was under the periosteum, the surface of the bone being rough, pitted, and exposed from the orbits to the occiput, and laterally to the upper border of the mastoid processes. There was a considerable amount of discharge for some weeks through these openings, but the scalp gradually became adherent to the skull, and complete healing resulted without any necrosis.

The subsequent history was uneventful. The dilatation of the superficial veins almost completely disappeared; there was no œdema of the scalp; the headaches and dizziness passed off; the middle ear became quite dry, the mastoid wound healed, and the patient was now in perfectly good health.

The PRESIDENT congratulated Mr. Whitehead upon his success in procuring a recovery in the face of such very severe lesions.

Mr. CHEATLE asked the exhibitor by what path he had reached the jugular bulb. The construction of many temporal bones showed that the route directly through the mastoid process would be extremely difficult.

Mr. C. ERNEST WEST said the course of this extraordinary case seemed to be, first, infective venous thrombosis, and second, diffuse osteomyelitis of the cranial vault. He had seen a case which perhaps would help to explain the œdema of the face in the present case. It was that of a boy in whom both jugular veins had been tied without œdema of the face resulting until late in the course of the case, and as the cavernous sinus had then become blocked, it must have been the obstruction to the orbital and facial veins which caused the facial œdema. He recalled to memory a fatal case where osteomyelitis appeared and spread over the cranial vault, inducing softening and erosion of the whole vault.

Mr. A. L. WHITEHEAD did not venture to claim credit for the successful issue, but considered the recovery more a matter of good luck than anything else. He obtained access to the jugular bulb by removing the lower half of the mastoid process. The proptosis was, he thought, due to a non-infective thrombosis of the cavernous sinus. It was a puzzle difficult of solution to explain what course the circulation took.

SECTION OF A THROMBOSED INTERNAL JUGULAR VEIN, WHICH COULD BE FELT IN THE NECK AS A DISTINCT CORD-LIKE STRUCTURE.

BY MR. A. L. WHITEHEAD.

The vein had been split longitudinally; a transverse section showed a clot occupying the lumen, consisting of fibrin, with

degenerated leucocytes. The adjacent vessel wall was densely infiltrated with round cells, and the endothelial lining was completely absorbed. The middle coat showed round-celled infiltration. The external coat was normal. There was no periphlebitis. The exhibitor added that he had never before believed in the text-book statement that in infective thrombosis the jugular vein could be felt in the neck as a distinct cord, but in this case it could be felt plainly, and it was noteworthy that enlarged glands were not present. In reply to a question by Mr. Cheatle, Mr. Whitehead said that the thrombus in the vein contained cocci, but showed no signs of disintegration.

A CASE OF CEREBELLAR ABSCESS SECONDARY TO INFECTIVE LABYRINTHITIS, ASSOCIATED WITH ACUTE INFLAMMATORY EDEMA OF THE BRAIN; RECOVERY; DETAILS OF OPERATIVE PROCEDURES.

BY MR. SYDNEY SCOTT.

J. C. T—, a male, aged twenty-eight, was admitted to St. Bartholomew's Hospital, July 15, 1908, with discharge from the left ear and severe headache.

*History.*—The patient said the left ear had discharged intermittently since boyhood, and that he had been deaf in this ear for over three years. Nine months ago he began to have severe attacks of vertigo, followed by vomiting and headache. He was unable to walk straight, and had to give up his employment for fear of falling. These attacks were frequent for five months, and for a time they were so severe that he had to keep in bed for two months during last winter. The attacks gradually ceased, and the giddiness passed off, so that he was able to resume work in the spring, and has remained comparatively well until a month ago. He then began to suffer from headache. Pain all over the head increased, and he vomited once or twice during the first week. The pain continued more or less, and two days ago became more severe, especially in the occipital region and in the back of the neck. Yesterday he was sick once. He had had no subjective sensations of giddiness, but he could not walk straight and was conscious of walking as if intoxicated. He had not had a rigor and had not felt feverish, but he had suffered from want of sleep and loss of appetite.

*Condition on Admission.*—The patient walked into the out-patient room with his head in a retracted position. He appeared to be in severe pain.

*Left Ear.*—Thin, blood-stained pus and polypoid granulations were found in the fundus of the left meatus. There was no mastoid swelling or tenderness, and no abnormally sensitive areas could be detected anywhere on the head or neck. Hearing by bone-conduction in the left ear was completely lost. Tuning-fork sounds were conducted to the opposite ear, which was found to be perfectly normal. Rombergism was well marked; the patient fell to the right when standing with feet together and the eyes closed.

*Gait.*—When attempting to walk along a straight line with eyes open he swerved to the right and nearly fell, but was able to recover the erect position.

*Nystagmus.*—Spontaneous nystagmus was well marked on deviation of the eyes to the *left* when the head was erect. The rhythmic movement was concomitant, and possessed considerable amplitude, so that the nystagmus elicited when the eyes were directed to the left was quite obvious. The period of movement of the eyeballs alternated regularly, so that each rapid jerk towards the side of deviation was succeeded by a slower movement in the opposite direction. On deviation of the visual axes to the right, with the head erect, no nystagmic movement was noticed at first, but on closer inspection a very fine rhythmic nystagmus was observed; the amplitude of movement was much less than that seen when the eyes were deviated towards the left; the direction of movement on deviation to the right appeared to be purely horizontal, with a distinctly alternating period, the rapid jerk being towards the side of deviation. In a day or two the nystagmus, on deviation to the right, became more easily recognised, and the direction of movement became distinctly oblique and slightly rotatory, with the rapid jerk towards the side of deviation.

*The Fundus Oculi.*—There was no swelling of either optic disc; the inner margins were equally and slightly blurred—an appearance attributable to refraction.

The rotation chair and Bárány's tests were not employed as aids to diagnosis in this case. The knee-jerks were equally well marked. There was no ankle clonus. The plantar reflex was flexor in type. Kernig's sign was considered to be demonstrated, for the knee-joint could be only slightly extended beyond the right angle when the thigh was semiflexed on the pelvis, the patient being in the reclining posture.

After being put to bed the patient became very restless, rolling about and holding his head in his hands. He yawned frequently. The temperature was 98° F. and the pulse-rate 72.

Lumbar puncture was performed, but there was no excess of cerebro-spinal fluid. A culture tube which was inoculated proved to be sterile after forty-eight hours' incubation.

Examination of the blood cytologically showed a leucocytosis of 19,400. The urine did not contain albumen or sugar.

A diagnosis was made of infective disease of the left labyrinth, complicated with a cerebellar abscess. Nothing else could explain the patient's condition.

An immediate operation was performed on the left mastoid. The antrum was found to contain granulations which led through a wide fistula into a cavity which replaced the canalicular part of the labyrinth. The facial nerve was found to be exposed on all sides, and surrounded by granulations (albeit there was no paralysis). Below the nerve, granulations were found replacing the cochlea and filling the vestibule. It was necessary to enlarge the fistula behind the facial nerve, to fully expose the unusual cavity which had formed in this part of the petrous, to remove the granulations it contained, and to ascertain that there was no sequestrum. The facial nerve was preserved from injury throughout the operation. No cerebro-spinal fluid escaped. The operation on the labyrinth having been completed, attention was directed to the posterior cranial fossa and cerebellum. The dura mater was exposed on the mesial aspect of the lateral sinus by enlarging the bony cavity directly backwards from the region of the labyrinth. The skull was unusually thick, and the bone extremely dense wherever it had to be removed. Granulations were found covering the dura mater over an area about the size of a threepenny piece (1.5 cm. in diameter); around this the dura mater was normal. The softened area of exposed dura mater was penetrated, and about 6 cm. of very foul pus escaped in a continuous stream. The abscess cavity was within the cerebellum, to which the meninges were adherent. The cavity readily admitted the last phalanx of the forefinger, and was found to have soft, yielding walls. A wide drainage-tube, 1.5 cm. in diameter, was introduced through the opening in the dura mater, but was not projected into the cerebellum any appreciable depth. The wound was packed lightly with gauze and left unsutured.

*Subsequent Course.*—The patient's headache was greatly relieved by the operation, but the pain returned within two days, and was very severe in the occipital and frontal regions. The patient became very restless and noisy, and required a male attendant. He vomited once. He exhibited well-marked inco-ordinate move-

ments of the left upper extremity. The pulse-rate became slower, falling to 52, and the temperature remained subnormal, 97° F.

A second operation was carried out to ascertain and remove the cause of these untoward signs.

The original cavity was enlarged and the dura mater of the middle cranial fossa exposed, and the dura mater of the posterior fossa and the sigmoid sinus widely exposed. The cerebellar abscess cavity was explored with the last phalanx of the forefinger; its walls appeared to have encroached on the cavity, and were everywhere soft and almost diffuent. No more pus escaped. The temporo-sphenoidal lobe was punctured in the direction of the lateral ventricle, which was not found to be distended. One felt justified in attributing the symptoms of oppression to acute inflammatory œdema of the brain; having regard to the almost invariably fatal termination of this complication, it was decided to enlarge the opening in the dura mater to permit herniation of the underlying cerebellum, and so to afford some relief to the intra-cranial tension. The dura mater was incised horizontally from the internal auditory meatus to the descending limb of the lateral sinus. No tube was inserted, but the cavity was lightly packed with gauze. The earlier part of the operation was hampered by profuse hemorrhage from the lateral sinus, which was accidentally nipped with bone forceps before the vessel was fully exposed.

*Subsequent Course.*—The following day the patient complained less of pain in the head, although he still had considerable sub-occipital pain and stiffness of muscles at the back of the neck, and the retraction of the head was still present. He had several attacks of hicoughing. Eventually he was able to sleep, which he had not been able to do for several days. A large hernia cerebelli rapidly formed, and nearly filled the operation cavity; at first there was no pulsation, but as the headache diminished the pulsation of the hernia and of the dura mater became evident.

Weakness of the left side of the face gradually developed, and eventually passed into complete paralysis. Kernig's sign and the retraction of the head disappeared with the headache and stiffness in about a week, when the hernia also ceased to increase in size. The leucocytosis persisted until the second week; the count was 18,000 on the ninth day. The actual exudation of pus was always small in quantity after the abscess was first opened. On the thirteenth day the leucocyte count was 7800.

The nystagmus diminished in intensity, but possessed the same characters as those noted on admission for two or three weeks. In



the course of time the nystagmic movements elicited by visual deviation to the right became more evident, while those resulting from deviation of the eyes to the left became less marked. At the end of the second fortnight the post-aural wound was entirely closed with secondary suture; the cavity was packed through the enlarged meatus. The wound and cavity rapidly healed, and ten days later the patient left the hospital. He could walk quite straight, and had regained co-ordinate control. His reflexes were normal, and there was no hypotonus or other evidence of cerebellar deficiency. The patient now felt perfectly well, and had returned to his work. The facial paralysis was the only defect which concerned him; though it was still possible that some power might return, no signs of improvement were yet manifest.

The PRESIDENT congratulated Mr. Scott upon his success, and felt he could do so without a word of criticism.

Dr. MILLIGAN asked what would be done with the hernia of the cerebellum into the external auditory meatus. He had a similar case some years ago, in which a hernia of the cerebellum occurred from œdema of the brain, secondary to the abscess for which the operation had been undertaken. He tried enlarging the opening in the bone, but this failed to make any impression on the hernia. Ultimately he found that the application of the old-fashioned remedy, a lead plate, was successful. Such herniæ were often difficult to deal with.

Mr. A. L. WHITEHEAD observed that the case emphasised the importance of attacking cerebellar abscess through the posterior petromastoid wall. He commenced the digital examination of the brain as likely to discover loculi which might contain pus, and, alluding to the frequency with which œdema of the brain caused death, especially in children, remarked that the complication was most to be dreaded when the cerebellum was the seat of the disease.

Dr. DAN MCKENZIE was interested in the varieties of nystagmus present in the case. When first it came under the exhibitor's notice there was spontaneous nystagmus to the diseased side, which was the typical nystagmus of cerebellar abscess, but although there was complete destruction of the labyrinth, yet the typical labyrinthine nystagmus—to the opposite side—was but slightly marked. This was to be accounted for by supposing that, as the history showed, the labyrinth was first invaded some months ago, when the patient suffered from vertigo so severe that he had to keep in bed. At that time the nystagmus present would be typically labyrinthine, *i. e.* to the side opposite to the disease. In process of time the labyrinthine nystagmus would diminish, and the case pass into the class called by Bárány "latent destruction of the labyrinth." This probably was the condition present when Mr. Scott first saw the case. Further, it would be seen from the history that during convalescence the labyrinthine nystagmus again predominated. This might, perhaps, be induced by the removal of the cerebellar lesion, which no doubt had counteracted the labyrinthine nystagmus to some extent. The speaker thought it was unfortunate that the caloric and rotation tests had been omitted, not because they would have influenced the diagnosis in this particular case, but because the results, obtained in

such a case as this, where the uncommon combination of labyrinthine destruction and cerebellar abscess existed, might have proved of value to other observers in the diagnosis of similar cases, where the other signs of the double lesion were less marked and the diagnosis less certain than they were here.

Mr. KELSON asked whether the facial paralysis, which had appeared as the other symptoms were getting better, could be ascribed to the operation.

The PRESIDENT, referring to the nystagmus, asked the exhibitor whether his experience bore out Neumann's somewhat dogmatic statement that in cerebellar abscess the direction of the spontaneous nystagmus was towards the diseased side. Was this a hard and fast rule sufficiently established to be of value in doubtful cases?

Mr. SYDNEY SCOTT replied that he had had no experience of spontaneous nystagmus in cerebellar abscess before this case. It was the double type of spontaneous nystagmus in this case which had led to the diagnosis of a double lesion. In reply to Dr. Milligan, he said that he intended to leave the hernia alone. The external meatus was obliterated, and the hernia was well protected. Indeed, the hernia was rather to be encouraged on account of the tendency to oedema. There had been no excess of cerebro-spinal fluid, as the puncture of the lateral ventricle had shown, and palpation had negatived the possibility of a second abscess, consequently the raised intra-cranial pressure could only have been due to oedema. For this reason the opening in the bone had been enlarged in order to allow the cerebellum to herniate. He agreed with Dr. McKenzie in his reading of the nystagmus. Replying to Dr. Kelson, who had raised the question of the facial paralysis, he explained that at the operation the facial nerve was found lying among granulation and quite bare of any bony covering, yet there had been no facial palsy before the operation, nor did it appear immediately after the operation. Consequently he supposed that the process of healing and cicatrization had caused the paralysis through the withdrawal of the blood-supply of the nerve trunk. It was possible that the facial paralysis might disappear.

#### A CASE OF INFECTIVE MENINGITIS, SECONDARY TO INJECTION OF THE LABYRINTH, SUCCESSFULLY TREATED BY TRANSLABYRINTHINE AND LUMBAR DRAINAGE.

By MR. C. ERNEST WEST AND MR. SYDNEY SCOTT.

A little girl, aged seven, was admitted to St. Bartholomew's Hospital on February 6, 1908, with long-standing purulent discharge from the left ear, to undergo treatment by the radical mastoid operation. She had presented no recent symptoms suggestive of labyrinthine disease. At the operation granulations were found filling the pelvis ovalis, destroying the stapes, and eroding the Fallopian aqueduct. The open fenestra ovalis was enlarged by the removal of bone inferiorly without interfering with the cochlea or semi-circular canals. When the inner wall of the vestibule was curetted cerebro-spinal fluid escaped freely.

The patient was unusually sick after the operation, and continued to vomit slightly for five days. Cerebro-spinal fluid escaped into the dressings for six days. The post-antral incision healed by primary union. Facial paralysis appeared on the third day.

A week after the operation the child complained of frontal headache, which became constant and severe, and retraction of the head developed. Kernig's sign was well marked, the kneejerks were suppressed, and the plantar reflex was extensor in type. The temperature rose to 109° F., and the pulse-rate to 112.

*Second Operation*, February 18. — Completion of "double vestibulotomy" and translabyrinthine drainage. The original operation cavity was re-opened, the external and superior semicircular canals were cut away and the vestibule opened above the facial nerve. The fundus of the internal auditory meatus was opened by removal of the antero-internal wall of the vestibule. A large quantity of cerebro-spinal fluid escaped under pressure from the opened internal auditory meatus. A wire doubled and spirally twisted was introduced as a drain into the internal auditory meatus through the open vestibule.

The immediate effect was remarkable. Headache and retraction disappeared. The temperature sank to 98° F., and the pulse to 88. Vomiting ceased. Two days later the triad of symptoms, headache, retraction, and Kernig's sign, reappeared. The temperature rose to 101·8° F., and the pulse-rate to 92. There was no squint or nystagmus; the pupils were equal and active; kneejerks were absent. During the next two or three days these symptoms were associated with the intermittent retention of cerebro-spinal fluid; after each dressing and manipulation of the wire drain there was a free escape of cerebro-spinal fluid into the dressing, with temporary disappearance of headache and retraction. On February 25, a week after drainage through the internal meatus had been established, the triad of symptoms became more marked, the child crying out continually with pain in the head. Lumbar puncture was performed, and turbid fluid was withdrawn. Cytological count showed an excess of polymorphonuclear leucocytes (62 per cent.) over lymphocytes (27 per cent.). No organisms could be recognised in films of the centrifuged (on February 25 nor on the 27th) fluid or in cultures. There was a high blood-leucocytosis of 45,000. There was no optic neuritis. After the withdrawal of fluid by lumbar puncture for examination the child was relieved, as she had previously been, by the flow of fluid from the basal meninges.

*Third Operation.*—On February 26 the possibility of a cerebellar abscess was excluded by exploration. Continuous drainage of the lumbar theca was established by a fine cannula introduced between the laminae of the fourth and fifth lumbar vertebrae, the outer end of the cannula being enveloped in a Keith's dressing. Subsequently the translabyrinthine and lumbar drainage wounds were dressed daily.

February 27.—The large pads of gauze and wool within the Keith's sheet were wrung out into a measuring glass; about half a pint of turbid fluid was expressed from them. General condition much improved.

February 28. — The quantity of fluid escaping from the lumbar theca continued to be very large, but it was now clear. Temperature 97° F.; pulse 80. Child taking fluid very freely. There was now no headache, and the head could be freely flexed on the chest. The child remained quite comfortable, but became very weak.

On the night of the 29th there was severe collapse; the child was cold and listless, pulse irregular and hard to count; vomiting reappeared. There was no headache, and the child was quite rational when roused, but intensely weak and apparently dying. *The cannula was removed from the spinal canal after eighty hours' continuous drainage.* The pelvis was raised and head lowered; hot saline and brandy was given by the rectum and hot milk and water by the mouth; strychnine hypodermically. During the next twelve hours three pints of fluid were taken by the mouth, as well as a pint of saline *per rectum*.

The child rallied marvellously, and on March 3 *the wire drain was removed after fourteen days' drainage of the basal meninges.* The subsequent course was uneventful, except for a minor plastic operation to close the post-aural wound, which had been left open after the second operation. She was discharged on April 8. The facial paralysis had now much improved. The ear was dry, and in general health the child was perfectly well.

The PRESIDENT asked whether there were any marked labyrinthine symptoms present, because the statement had been made that meningitis consequent upon the radical mastoid operation was specially liable to appear if granulations on the inner wall of the tympanum were scraped. Had these been left in this case would meningitis have resulted?

Mr. CHEATLE expressed his great interest in the methods adopted and result secured in this case. Possibly the infection of the labyrinth had been due to surgical enthusiasm, but whatever the cause had been the methods of continuous drainage of the sub-arachnoid spaces through

the internal meatus and lumbar spine were new to him, and he would adopt them in future.

Dr. KERR LOVE offered his congratulations to the authors of the paper, because of the light they had thrown on the treatment of meningitis. The result had corroborated his own feeling that there was a general tendency to look upon meningitis too seriously. Meningitis without ear disease was not invariably fatal, if they were to call by that name the disease which seemed to be responsible for so many cases of deaf-mutism. Like the last speaker, he would in future treat otitic meningitis by drainage through the internal auditory meatus.

Mr. WAGGETT had, on one occasion, drained a case of meningitis for five days with an excellent immediate result. But he noticed that after the prolonged drainage the patient became very exhausted, and he warned the Section of the dangers run when large quantities of cerebro-spinal fluid were removed.

Mr. WHITEHEAD asked if the cerebro-spinal fluid was examined after the second operation, and if so, whether it was serous or purulent.

In reply to Dr. Milligan, Mr. WEST said that the temperature put down in the notes as  $109^{\circ}$  F. was incorrect; it should have been  $102^{\circ}$  F. In the early history of the case there had been no symptoms of labyrinthitis, and he was willing to admit that it might have never arisen had the inner tympanic wall been left alone. At the same time he had seen death follow so often in cases where he had left the granulations that in his judgment it was safer to remove them and to open the labyrinth. He had not taken the tuning-fork tests because the child was so young that the tests would be unreliable. Besides, he had little faith in tuning-fork tests. He had had another case of meningitis similar to this one, but more fulminating, where drainage had cured the meningitis, in the pathologist's opinion. The patient died of pneumonia. The present case had begun as serous meningitis, and had passed on to sero-purulent meningitis.

Mr. SYDNEY SCOTT agreed with Dr. Love that too serious a view of meningitis was prevalent. The steps in this case had been determined by the discovery in a former case of a patient who had died of acute hydrocephalus, of distension of the membranes around the seventh and eighth cranial nerves. The ventricles were also much distended. It had struck him that, if the subarachnoid space had been drained through the internal meatus, the case might have recovered. There were two classes of meningitis: one, where the symptoms were chiefly those of raised intra-cranial pressure, and the other, where general toxæmic signs predominated. Many cases of meningitis admitted to medical wards were otitic. In the meningitis of pneumonia and scarlet fever, the disease-process could be traced along the trunk of the nerves up to the internal auditory meatus, and here it stopped. There was some lymphocytic infiltration under the endosteum. Thus the appearances were quite different from what they were in meningitis secondary to labyrinthine infection.

#### A CASE OF PURULENT ENCEPHALITIS TREATED BY DRAINAGE AND REMOVAL OF INFECTED BRAIN-TISSUE.

BY MR. C. ERNEST WEST.

Male patient, aged seventeen, admitted to St. Bartholomew's

Hospital, September 18, 1908, with bilateral otorrhœa and headache. The otorrhœa had been present for at least two years; headache for five or six weeks, worse during the last five days, diffuse, but worse on left side. There had been drowsiness for four days, during which time there had been several rigors. No history of vomiting, vertigo, or tinnitus. Looks recently ill, tongue thickly coated. Temperature 100° F.; pulse 85, good tension, regular, no dirotism. Respiration very shallow, 24.

*Ears.*—No swelling of meatal walls. Both membranes gone; irregular warty granulations on inner tympanic walls. Slight tenderness of left mastoid on firm pressure, none on right. No mastoid œdema.

*Eyes.*—No nystagmus; no squint. Dises both slightly congested, but not swollen.

*Head and Neck.*—No paralysis of cranial nerves; no retraction of head. Some enlargement of upper deep cervical glands on both sides without tenderness.

*Knee-jerks* equal; not exaggerated; grips equal; no incoordination.

*Mental Condition.*—Answers questions slowly, but with clearness, and without difficulty in use of words. Lencocytosis, 21,000.

*Operation* carried out immediately on left side. During initial radical mastoid operation a large supra-tegmenal abscess was opened. Dura above the tegmen necrotic over an area about 1 cm. in diameter, fistula through this area leading into the temporo-sphenoidal lobe. Fistula enlarged, and a small amount of very smelly pus evacuated. There was no definite abscess cavity, the surrounding brain being sloughy and ragged. Rubber drainage-tube sutured in position; wound left open and cavity packed from behind. Five hours after the operation the patient could answer questions rapidly and accurately, but could not remember where he lived. Headache relieved.

There were some fluctuations of condition during the next four days. The wound was very offensive, and was treated by fomentations.

On the evening of the 22nd his temperature rose suddenly from 98°–104.6° F.; there was no rigor. He became very drowsy, but when roused complained of frontal headache. Pupils equal, moderately dilated; no squint; no retraction. Pulse relatively slow, 80 when temperature 104.6° F.

*Second Operation.*—At 10:30 p.m. wound re-opened. Widespread but thin layer of pus found between dura and bone; whole of

squama removed. Free incision of dura mater, and exploration of region of abscess. The interior of the brain was found to be sloughing, and stank horribly. No further collection of pus found. A large window was cut out of the dura mater, which had been in contact with the tegmen and squama, about the area of a half-crown, and the underlying cortex and white matter was freely scooped away with a large Volkmann's spoon until the sloughing area was widely exposed. This resulted in the descent of the exposed surface into the opening, and the provision of excellent drainage from an otherwise inaccessible part. The cavity was filled with gauze, and the patient returned to bed in a much improved condition. There was no noticeable shock.

*Subsequent Course.*—Temperature fell by lysis to normal during the next forty-eight hours; disappearance of headache. Daily dressing. The brain did not herniate, but remained at the level of the gap in the dura mater; sloughs of brain and dura mater slowly separated. Secondary suture of the wound on October 14. Sent to convalescent home November 3. Mental condition quite satisfactory; no evidence of any paralysis or disability.

Mr. WAGGETT was surprised at the fatality of encephalitis in children compared with adults. He had had many cases in children, and only one had recovered.

Dr. BRONNER asked whether there were diplococci in the ear.

Mr. HUNTER TOD questioned the wisdom of curretting out the brain substance, although it was successful in this case. He feared that to do so was to run the risk of causing an extension of the œdema.

Mr. WHITEHEAD agreed with the last speaker. Unnecessary risk was run.

Dr. KERR LOVE had a case under his care at present which promised to do well although the temperature still remained febrile. A child, aged three and a half, had the radical mastoid performed on one side. The other ear went wrong, and an otitic abscess which formed in the temporo-sphenoidal lobe was opened and drained without any removal of brain-tissue. The abscess had now healed, and although there was still fever unexplained by the present signs and symptoms, yet he thought the case would recover.

Mr. WEST, in reply, said the streptococcus in pure culture was obtained from the abscess. He did not recommend for all cases the procedure he had here adopted. This case was desperate. The brain contained stinking sloughs deep in its substance, and simple drainage would have been futile.

#### SPECIMENS, MACRO- AND MICROSCOPIC, OF TUMOUR OF THE AUDITORY NERVE.

BY MR. MACLEOD YEARSLEY.

This tumour was shown at the last meeting, and the notes

were given in full in the programme. The pathologist's report says: "This tumour is a fibroma, such as is known to arise from the sheaths of nerves. It is comprised of interlacing bundles of fibres and areas of mucoid softened tissue. There is no reason to regard the growth as malignant."

Dr. ALBERT GRAY inquired whether tinnitus was present in this case. It was in his experience an occasional but rare symptom in tumour of the auditory nerve.

#### A SYRINGE FOR USE AFTER THE RADICAL POST-AURAL OPERATION.

By Dr. URBAN PRITCHARD.

The opening of the nozzle of this syringe is at the side of the tip, so that the direction of the injection is sideways, not straight-forward, thus resembling an air intra-tympanic syringe, but the current is larger and the force greater. By its use the posterior *cul-de-sac* of the cavity can be easily washed out.

Dr. DUNDAS GRANT thought the instrument was much wanted, and was only surprised it had not been invented before.

Dr. BRONNER asked if its forcible use was not dangerous.

Mr. CRESWELL BABER suggested a mark being made to indicate the direction of the orifice.

Dr. PRITCHARD said force should be avoided, and pointed out that the direction was indicated by a mark and also by the position of the finger-rings.

#### ANATOMICAL SPECIMENS ILLUSTRATING THE SURGICAL ANATOMY OF THE TEMPORAL BONE.

By Mr. ARTHUR CHEATLE.

The PRESIDENT thanked Mr. Cheatle on behalf of the Section for his instructive exhibit, and in response to requests Mr. Cheatle undertook to leave the collection for a week at the Society's Rooms.

Dr. GRAY hoped Mr. Cheatle would bring forward his pathological specimens.

#### CASE OF TEMPORO-SPHENOIDAL ABSCESS WITH MANIACAL SYMPTOMS, OPENED UP THROUGH TEGMEN TYMPANI, WASHED OUT AND DRAINED, AND TREATED WITH IODOFORM.

By Dr. ADOLPH BRONNER.

Girl, aged eleven, had discharge from left ear for nearly two years. Last few months pain in ear and head. Two days very excited, and if touched or spoken to screamed and fought, and threw herself on the floor. Papillitis. Pulse 42.



*Mastoid Opened.*—Small cholesteatoma of attic. Tegmen tympani removed. Dura thickened, and slightly adherent. Incision. Pus searcher found pus quarter of an inch above dura; cavity washed out, and iodoform emulsion injected; drained, and iodoform injected for eight days. In four days recurrence of pain; cavity re-opened, and much clear bloody serum escaped.

Points of interest:

- (1) Maniacal symptoms when talked to.
- (2) Abscess opened through tegmen tympani.
- (3) Cavity re-filled with non-purulent serum after eight days' draining.

This speaks in favour of draining and washing out cavity, and injecting iodoform.

The PRESIDENT referred to the rarity of maniacal symptoms.

Dr. DUNDAS GRANT agreed, but mentioned a case of his own in which maniacal symptoms like those of delirium tremens (illusious rather than hallucinations) were present. The case was one of left temporo-sphenoidal abscess, which was rather superficial and in which complete recovery took place.

Mr. HUNTER TOD inquired whether Dr. Bronner habitually irrigated in these cases.

Dr. BRONNER, in reply, stated that he generally avoided irrigation, but when, as in this case, there was a very thick wall, he employed it. The maniacal symptoms took the form of aversion to certain people, but they entirely disappeared after the operation. In regard to drainage, he thought that in thick-walled abscesses a tube was best, in those with thin walls, gauze.

#### CASE OF UNUSUAL FORM OF INFLAMMATION OF THE EXTERNAL MEATUS IN A GIRL.

By Dr. KELSON.

For several days the patient complained of intense pain. The passage was described as having been "first white and then red." It was much narrowed, and the wall at its outer part was covered by an adherent white deposit on a reddish base.

The PRESIDENT had seen such a case before, in which syphilis was suspected.

Mr. SCOTT asked for bacteriological details.

Dr. GRANT thought the deposit too dry for condylomata. He thought there was a precedent skin-affection in the meatus, and that circumscribed acute inflammation had been set up by inoculation from the finger-nail during scratching of the part.

## AUSTRALIAN MEDICAL CONGRESS—OPHTHALMOLOGICAL AND OTOLOGICAL SECTION.

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Eighth Session.

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(Report by J. W. BARRETT, M.D., F.R.C.S.ENG., Melbourne.)

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THE Eighth Session of the Australasian Medical Congress was held in Melbourne during the week ending October 24, 1908.

The number of members of the Congress was about 800, and the attendance at the Ophthalmological and Otological Section was at times as much as 30.

The principal work consisted in a *discussion on the treatment of diseases of the accessory sinuses*, which was introduced by Dr. Kent Hughes (Melbourne, Victoria), who advocated the exploratory opening of the frontal sinus in cases of recurring polypi. The balance of opinion was in favour of the removal of the anterior wall of the frontal sinus as against the complete Killian operation. One case was reported, after the operation of curetting the ethmoid cells, of proptosis followed by total blindness of one eye, occurring within an hour of the operation.

Some excellent work, on the dissections of the temporal bone, showing *variations of the course of the facial nerve*, was shown for Dr. Russell Nolan (Sydney, N. S. Wales).

On the last day of the Congress, Dr. Brady (Sydney, N. S. Wales) opened a *discussion on the treatment of deflections of the nasal septum*. His attitude was moderately conservative, and he deprecated the undue application of the operation of submucous resection, valuable as it is, and brilliant as are the results sometimes obtained. The general feeling was that the operation of submucous resection should be limited to the cartilaginous septum, and that in any event, if the bony spur required operation, the operation should be undertaken in two stages.

The Section decided to forward an expression of its appreciation of the life work of *Professor Adam Politzer*, Vienna, on the occasion of his retirement.

The Section further decided to recommend to the General Meeting of Congress that they should urge on the Governments of the various States of Australia the necessity of the *systematic medical inspection and examination of school-children*.

The Section visited the new *Victorian Eye and Ear Hospital*. This hospital is now accommodated with eighty-three beds, two

operating theatres, and very extensive out-patient accommodation. It is excellently lighted and ventilated, the windows being of the "magic balance" type. The heating is effected by hot-water radiators, and a double electrical service is supplied, a 230-volt continuous current for motor purposes and for using the giant magnet, and a 200-volt alternating current for lighting purposes. In connection with the out-patient department a dark room has been provided, and has been so constructed that light and air can be fully admitted when the room is not in use. A small clinical laboratory and instrument room is to be found adjoining. Provision is made for the sterilisation of the clothes of the patients with formol aldehyde. A sterilising room for both operating room and the hospital in general is being constructed. It is now proposed to build a house for the accommodation of the matron and nurses, with twelve sleeping rooms and ample sitting-room conveniences. The staff of the Hospital numbers twelve, including surgeons, assistant surgeons, and clinical assistants, the latter being regulated in number.

The social side of the Congress was well developed. The various State functions were particularly brilliant, and the members of the Congress managed to get through a good deal of work, and also to enjoy themselves immensely.

The details of the various papers will appear in the proceedings, to be published shortly.

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## REVIEW.

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*Lehrbuch der Ohrenheilkunde für Practische Aerzte und Studierende* [*Text-book of Otology for Practitioners and Students*]. By Dr. ADAM POLITZER, Professor of Otology at the University of Vienna, Court-Councillor, etc. Fifth edition, completely revised and enlarged, with 337 illustrations in the text. Stuttgart: Ferdinand Enke, 1908.

Since the publication of the former edition of this work in 1901 considerable changes and advances have taken place in the science of otology, and in the edition now before us (1908) these changes are fully set forth, as would be expected at the hands of so progressive and conscientious a writer as Professor Politzer. They are carefully weighed and appraised as can only be done by one possessing his vast clinical and pathological experience. The order of the various sections has undergone some change, and among other instances we note that the description of the anatomy and physiology of the internal ear is placed now along with those of the middle ear. A special section is devoted to the detection

of unilateral deafness, and another to the tests for the action of the vestibular apparatus, for which a place is now made in the form for case-taking. The prognosis in chronic suppuration of the middle ear receives special attention (p. 378). Among the more important changes may be noted the results of recent investigations on the histology of the internal ear, including investigations of Brühl and Bielschowsky on the bi-polar cells of the vestibular ganglion, and the relation of the terminations of the non-medullated fibres of the vestibular nerve to the hair-cells of the maculæ and cristæ. The relation of the cochlear nerve to the central course of the auditory fibres is shown in a diagram of Obersteiner's, which is exactly in accordance with the one familiar to English readers as representing the results of experiments by Turner and Ferrier (p. 72). Ewald's division of the labyrinth into the auditory and the tonus segments is now confirmed by the investigations of Asch, Dreyfus and others (p. 75). The treatment of middle-ear catarrh has been revised, and some very valuable practical points are emphasised, among others, that too long-continued local treatment is apt to lead not merely to diminution in the improvement which it has effected, but even to produce a diminution of the hearing to a greater degree than was present before. This we hold to be a point which the practitioner cannot too carefully keep before his mind. The author attaches comparatively slight value to the dilatation of the Eustachian tube by means of bougies, and limits its application to those cases in which the stricture does not yield to any other form of treatment (p. 287). Resection of the posterior tympanic fold is strongly advocated in those cases in which the objective evidence of abnormal retraction of the drum is very pronounced, and in which an improvement in hearing of short duration is produced by inflation. He goes so far as to say that when improvement follows tenotomy of the tensor tympani, it is probably in most cases due to division of the posterior fold.

The chapter on typical oto-sclerosis has been amplified in the light of observations both on the part of the writer and of others. Many will recollect his communication at the Roman Congress on what he then described as a primary disease of the capsule of the labyrinth, and which he stated was accompanied by the symptoms which we now recognise as those of sclerosis. Any changes in the mucous membrane he considers to be simply coincidental, and he is convinced that in the specimens produced by Habermann showing analogous osseous changes in the capsule of the labyrinth in chronic suppuration of the middle ear, there was an independent suppuration of the middle ear implanted on an already existing sclerosis (p. 298). The prognosis is shortly put forward as clearly as it can be, and in spite of its generally being unfavourable the writer states that there are cases of sclerosis in which the dulness of hearing remains stationary for many years. Unfortunately in these cases sudden change for the worst is apt to take place, but those who have had much experience will certainly be able to recall cases in which the usual unfavourable prognosis was not confirmed by the event (p. 301). The paracusis Willisii is attributed to an increased irritability of the auditory nerve produced by the concussion, and he attributes it to the effect of mechanical rather than sonorous vibration (p. 300). Unfortunately he has little new to offer in the way of therapeutics for this disappointing condition. Where, however, there is reason to suppose that the footplate of the stapes is not very greatly fixed, he has known a more striking improvement in the hearing produced by pneumo-massage than by Eustachian inflation (p. 302). In a certain number of cases treated

by nitrites the progress of the disease seemed to come to a standstill; the same may be said of Siebenmann's phosphorus treatment, but as the same result is observable in a certain number of cases in which no such remedies are employed, the relation of cause and effect is scarcely proved. A rational and physicianly study of the diathesis of the individual patient will probably lead us to such a modicum of success as is ever likely to be reached. The description of the treatment for cholesteatoma has undergone some change. Various methods of syringing out the masses are detailed, irrigation through the Eustachian tube being particularly recommended. We cannot help feeling that in view of the possibility of a cholesteatoma having already produced latent erosion of the bone, we are justified in feeling some hesitation in advising syringing with any vigour in cases of the kind. The former references to the value of alcohol (recommended by Jacobson and by Lermoyez) are omitted, and perhydrol receives special praise. The indications for ossiculectomy are slightly more restricted than in former editions, but it is suggested that further clinical experience will show it will be found advisable in extreme adhesions or calcification of the membrane, soldering of the malleus to the inner tympanic wall, ankylosis of the malleus and incus, and intractable narrowing of the Eustachian tube. The intra-aural method is now the only one recommended.

Professor Politzer is not very sanguine in his prognosis as to the results of ossiculectomy in chronic suppuration. He finds it usually beneficial to the hearing (p. 434), but, of course, he wisely avoids the operation in cases in which the hearing is not very bad. We are sure there is ample scope for its successful performance in properly selected cases. The section on mastoid disease includes a new paragraph on Bier's passive hyperæmia, with a comparison of the various discordant views of different observers. The conclusions arrived at in Professor Politzer's clinic are, that it is only advisable in the incipient stage (the first four days), and that a further continuance leads to a rapid extension of breaking down of the bone. In the performance of the radical mastoid operation the use of Stacke's protector is strongly recommended (p. 466), and, as we think, most advisably. He is not in favour of retention of the cholesteatoma matrix (p. 468) and scrapes it freely out, quoting Laufal as recommending further cauterisation of the osseous surface with Paquelin's cautery or dabbing with tincture of cantharides. We think it possible to preserve the matrix in appropriate cases. Professor Politzer considers it most important to obtain cicatricial closure of the tympanic ostium of the Eustachian tube by free curetting with the sharp spoon. The various forms of "plastic" are still more fully illustrated in this edition than in the former ones (p. 475). Passow's most recent method is well described. Among the various methods of transplanting Thiersch grafts, Professor Politzer recommends an intra-auricular method devised by himself, according to which the graft is introduced through the meatus on a rounded or bulbous glass tube, from which it is driven into its position by air blown down by means of a ball connected by india-rubber tubing with the glass pipe. In cases of persistent desquamation after healing he advises instillations of perhydrol 5 parts and alcohol and water of each 25. The question of the prognosis as to hearing-power after operation is very thoroughly considered (p. 484), and Professor Politzer is less sanguine than many authors. He quotes Ruttin's interesting generalisation that a hearing-power of from  $1\frac{1}{2}$  to 2 metres before operation is not likely to be made worse, but that a higher degree of hearing-power is likely to be reduced to this.

The chapter on intra-cranial complications is preluded by a newly-introduced section on suppuration in the labyrinth. This is enriched by several original pathological drawings. The symptomatology is well worked up in the light of the modern investigations of von Stein and the still more modern ones of Barany. In the diagnosis between labyrinth and cerebellar suppuration he quotes Neumann's dicta (p. 495). These are to the effect that if nystagmus, which was at first greatest on looking to the sound side, becomes afterwards greatest on looking to the diseased one, the cause is cerebellar abscess, not labyrinthine suppuration. The mode of access to cerebellar abscess through the posterior wall of the mastoid wound-cavity, as described by Okada, is recommended, and Milligan's suggestion that lumbar puncture should be practised as a preliminary to operation on cerebellar abscess, so as to reduce the intra-cranial pressure and diminish the risks attending the anaesthetic, is quoted with approval (p. 519).

It will be obvious that this work is replete not merely with general principles but with exact details, and that, moreover, its teaching is abreast of the most modern advances or changes in otological science and practice. It is only to be hoped that the illustrious author may be long spared to continue his critical and analytical studies in the branch of medicine with which he is identified. The student of otology who knows this work well has little more to learn. *Dundas Grant.*

## Abstracts.

### PHARYNX.

**Metcalf, Carleton.**—*Two Palatal Anomalies.* "Boston Med. and Surg. Journ.," September 24, 1908.

First case one of double uvula in a man, aged forty-one. The second, a congenital cleft of the hard palate in the median line, 1 cm. posterior to the anterior palatine fossa and 3 cm. in diameter, in a child, aged four months. *Macleod Yearsley.*

### EAR.

**Hammond, Philip.**—*Thrombosis of the Lateral Sinus.* "Boston Med. and Surg. Journ.," September 24, 1908.

The author describes five cases, with charts, operated upon within as many weeks, all recovering well. The leucocyte counts were as follows: (1) 24,000, double optic neuritis, jugular thrombosed nearly to clavicle; (2) 13,000, jugular vein tied; (3) 9000; (4) not mentioned; (5) 9500. *Macleod Yearsley.*

**Dolger, R. (Munich).**—*The Otological Functions of the Army Medical Officer.* (Review by Siebenmann.) "Correspond. Blatt für Schweizer Aerzte," October 15, 1908.

The most important part of this publication, according to Siebenmann, is that which emphasises the value of the Bezold-Edelmann test for hearing. The author urges its more universal adoption. *Alex. Tweedie.*





THE LATE PROFESSOR FRIEDRICH BEZOLD.



# THE JOURNAL OF LARYNGOLOGY. RHINOLOGY, AND OTOTOLOGY.

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## THE LATE PROFESSOR BE OLD.

FOR many years the name of Friedrich Bezold has been familiar to our readers as a more than ordinarily indefatigable worker and as a highly original and authoritative experimenter and thinker in the realm of otology. He died on October 6 last of carcinoma of the stomach, having been born in the year 1842. After passing his examinations he devoted a good deal of time to the study of the eye, until Virchow induced him to devote himself to otology, and he joined the University of Munich in 1877. Nine years later he was made Extraordinary Professor, and in 1906 he received the title and rank of Full Professor. He was, of course, an honorary member of numerous otological societies in various parts of the world. According to Professor Scheibe his works amounted to ninety-one in number, among them the very important one known to many of our readers as his "Ueberschau über den Gegenwärtigen Stand der Ohrenheilkunde," which was published in 1895, and which consists of a valuable set of statistics of diseases of the ear, with many important deductions derived from them.

He was among the first to study the "corrosion" anatomy of the cavities of the middle ear, and he, perhaps more than any other, established the generalisation in the physiology of the ear that the tympanic mechanism exists mainly for the conveyance of the deeper tones. His name is associated in particular with three land-marks in otology: "Bezold's triad" of functional signs characteristic of oto-sclerosis, "Bezold's mastoiditis," and "Bezold's

continuous tone-series," which are almost as familiar as "Politzer's method" of inflation. The continuous tone-series led to investigations which have entitled Professor Bezold to a place among the great benefactors of the human race, namely, his indefatigable examination into the residuum of hearing-power present in "deaf-mutes." Owing to this line of study many have learned to converse with their fellows by the ordinary means of communication instead of being condemned to the use of signs and finger-alphabets. His "Text-book of Otology," issued so recently as 1906, and translated into English by Holinger in 1908, contains, in very moderate space, the outcome of his long investigations in relation to the diagnosis and treatment of diseases of the ear.

Professor Bezold was obviously of a nervous temperament, and it is recorded of him that he was so diffident as to his capacity for teaching that he hesitated long before deciding to seek appointment as an instructor in the University. He lost his father when very young, and was therefore brought up and mainly educated by his mother, with the not unusual results of such training. Thus we find an almost pathological amount of industry as the expression of a morbidly conscientious desire to counteract such mediocrity as that with which he credited himself. His work, though no doubt a labour of love, was nevertheless without doubt a labour, and the earnest expression of his features could not fail to convey to the observer the strain under which his enormous work was carried on. The world owes a great deal to the owners of the nervous temperament, and the otologist's indebtedness to Professor Bezold is indeed enormous.

Sympathetic and comprehensive obituary notices of the illustrious deceased are to be found in the *Deutsche medizinische Wochenschrift*, December 24, 1908 (No. 52), and the *Münchener medizinische Wochenschrift*, November 3, 1908 (No. 44), by the well-known aurists, his distinguished pupils, Professor Scheibe, of Munich, and Professor Denker, of Erlangen, respectively.

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### BAUER'S METHOD OF SEROLOGICAL DIAGNOSIS OF SYPHILIS.

IN view of the questions with regard to Bauer's method of serological diagnosis raised in the discussion on syphilis especially affecting the upper air-passages in the Laryngological Section of the Royal Society of Medicine, the following translation of the description of this method, as given by the author in No. 16 of the

*Deutsche medizinische Wochenschrift* for 1908, will probably be read with considerable interest. Without entering into theoretical considerations, the following is an exact statement of the method employed, which is a simplification of the original Wassermann method.

If normal human serum mixed with the serum of the guinea-pig is added to sheep's blood, hæmolysis of the latter takes place pretty rapidly, and if, instead of normal human serum, syphilitic serum is employed, the hæmolysis is much retarded. If, further, to the two sera some liver-extract (as prepared by Michaelis and Lesser) is added the hæmolysis is absent, while if normal instead of syphilitic is used complete hæmolysis takes place. The liver-extract is made as follows: The liver of a syphilitic fœtus or infant is rubbed down and shaken over-night in ten times its bulk of absolute alcohol. The supernatant fluid produced by centrifuging is, when used, mixed with four times its bulk of normal saline solution. It is then tested as to whether 1 c.c. prevents the hæmolysis of 1 c.c. of sheep's blood with 0.2 c.c. of normal human serum and 0.1 c.c. of guinea-pig serum. If it does, it is diluted till the strength is reached which no longer prevents hæmolysis.

The following are the materials required for testing for syphilis in a given case: (1) Guinea-pig serum, which must be fresh or preserved by freezing; (2) liver extract as above described; (3) a 5 per cent. suspension of sheep's blood-corpuscles in normal saline solution; (4) serum from the patient heated to 56° C. (132.8° F.) in a water-bath for half an hour; (5) the same from a healthy subject similarly heated.

Four test-tubes are then employed. In the first is poured 0.2 c.c. of the patient's serum, 1 c.c. of the liver extract, and 1 c.c. of a 1 in 10 dilution of guinea-pig serum. The second holds the same, but with normal saline solution instead of liver extract. In the third is put 0.2 c.c. of healthy human serum with liver extract and guinea-pig serum as in the first. The fourth is similar to the third, but with normal saline instead of liver extract. The four tubes are left in an incubator or water-bath at 37° C. (98.6° F.) for half an hour, and then 1 c.c. of the suspension of sheep's corpuscles above described is added to each. After from fifteen to forty-five minutes hæmolysis takes place in the third and fourth tubes, and at the same time or sooner or later in the second, but if the patient's serum is syphilitic the first tube shows no hæmolysis.

D. G.

**LABYRINTHINE NYSTAGMUS: AN ANALYTICAL REVIEW OF  
DR. ROBERT BÁRÁNY'S "PHYSIOLOGIE UND PATHO-  
LOGIE DES BOGENANG-APPARATES BEIM MENSCHEN."**

BY DAN MCKENZIE, M.D. GLAS., F.R.C.S.E.

Assistant Surgeon, London Central Throat and Ear Hospital.

"THE life of a patient may depend upon an accurate investigation of the functions of the labyrinth." This paraphrase of a remark of Bárány's may fittingly form the text of a review of his book, and at the same time, an excuse for making that review exhaustive and lengthy.

*Anatomy of the Canalicular System.*—The accompanying mnemonic diagram will be found to be a convenient key to the solu-

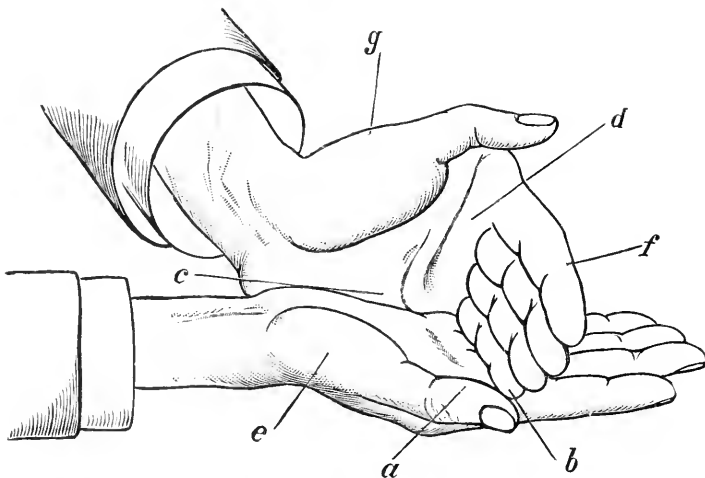


FIG. 1.—Mnemonic diagram of the canalicular system of the right side. *a*, The ampulla of the horizontal semi-circular canal; *b*, the ampulla of the anterior vertical (superior) canal; *c*, the ampulla of the posterior vertical (posterior) canal; *d*, the confluence of the two vertical canals; *e*, the convexity of the horizontal; *f*, the convexity of the anterior vertical; and *g*, the convexity of the posterior vertical canals.

tion of the many difficult problems we have to deal with in the following article. It represents, as may be seen by referring to the description, the canalicular system of the right side.

While all the anatomical points are of interest, it is particularly necessary to note and remember the position of the ampullæ. Each canal has one ampulla, or dilatation, and here the hair-cells, which, with the crista, form the end-organ of the vestibular nerve, have their seat. The ampullæ of the horizontal and anterior vertical

(or in the puzzling English nomenclature, the external and the superior) canals lie near the confluence of these canals. In the figure the former lies in the neighbourhood of the proximal metacarpal bone of the right index finger, and the latter at the terminal phalanx of the left little finger. The ampulla of the posterior vertical canal corresponds to the middle of the metacarpal bone of the left little finger. The union of the two vertical canals is indicated by a line across the heads of the metacarpals of the left hand.

Leaving the diagram and turning to the temporal bone, we find that the ampulla of the posterior vertical canal lies close to the jugular bulb, and at the same time near the fenestra rotunda. The convexity of the horizontal canal forms the prominence on the inner wall of the mastoid antrum with which we are all familiar in performing the radical mastoid operation, and its ampulla and that of the anterior vertical canal lie close above the knee of the facial nerve and the oval window.

The bony canals lodge very slender, thin-walled, membranous tubes filled with endolymph. The lumen of the membranous canals is about equal to the cross-section of a pin, while the ampullæ are about the size of a pin's head. In the ampulla is the crista with its hair-cells, from which the stimuli set up by the movements of the endolymph pass *viâ* the vestibular ganglion, the vestibular nerve, and its nucleus in the medulla, to Deiter's nucleus. From Deiter's nucleus fibres radiate—(1) to the nucleus of the motor nerves of the muscles of the eye on both sides, and (2) to the motor neurones of the spinal cord on both sides. Through the former the ocular movements of vestibular nystagmus are induced, and through the latter is brought about the irregular gait which characterises violent excitation of the vestibular system.

*Physiology.*—By his experiments on pigeons, Ewald showed that movement of the endolymph from the convexity of the right horizontal semi-circular canal to its ampulla caused horizontal nystagmus to the right, and movement of the endolymph in the opposite direction, from the ampulla towards the convexity, set up horizontal nystagmus to the left. Similar experiments carried out on the vertical canals produced nystagmus corresponding to their direction.

It is important to note that the nystagmus which arises from stimulation of the canaliculi is unlike the nystagmus found in insular sclerosis and other diseases of the central nervous system, in that it consists of two distinct and separate ocular movements,

regular and rhythmical ; these are—(1) a short quick twitch of the eye in one direction—the rapid phase, followed by (2) a slow movement in the opposite direction—the slow phase.

[This description is Bárány's, but most observers will agree in saying that the order of the two events should be reversed ; that is to say, that the second movement occurs first, the eye being slowly deviated from, and then quickly caught back again to, its original position. Indeed, from remarks made by the author later in the book, he also holds that this is the actual sequence of events, but it seems for the moment to have escaped his notice.—D. M.]

Vestibular nystagmus is always most distinct when the patient is made to turn his eyes in the direction of the rapid twitch. If, for example, the nystagmus shows a rapid movement to the left, the ocular excursions will become more extensive, and the nystagmus plainer, by causing the patient to turn his eyes to the left. On the other hand, the nystagmus will be lessened, or even abolished, when he looks towards the right.

Nystagmus is described as “to the left” (or “to the right,” as the case may be) when the rapid phase is directed to the left, and when the nystagmus is increased by looking to the left and diminished by looking to the right. When the nystagmus is rotatory it is termed “right” or “left,” according to the direction of movement of the upper end of the meridian of the iris. This form is subject to the same intensification and diminution, by moving the eyes, as the horizontal form.

We can produce vestibular nystagmus by rotating the patient, by injecting cold or hot water into the external auditory meatus, and in other ways. The following is a detailed account of the methods employed in thus testing the functional activity of the labyrinth.

*Rotation.*—The patient is seated, with his feet free of the floor, upon a turn-stool. The stool is rotated at a very moderate speed for a limited number of times, viz. ten complete revolutions in twenty to twenty-two seconds. Smoked glasses are worn, otherwise the nystagmus may be inhibited by the patient fixing his eyes upon some object. After the rotation is stopped the direction of the nystagmus is observed, and, by means of a stop-watch, the length of time it continues is measured.

Rotation is said to be “to the right” when the patient is turned from left to right in the direction of the hands of a watch with the face upward (or as in the military command, “right-about turn”), and “to the left” when he is turned from right to left.

*Effect of Rotation.*—When, with the head in the erect position, an individual is rotated from left to right, the movement affects, of course, only the horizontal canals. At the beginning of rotation the endolymph in the right canal, in virtue of its fluid inertia, flows towards the ampulla, relatively speaking. In the left canal it flows away from the ampulla. If the rotation is continued without interruption, the endolymph, as time goes on, lags behind its wall less and less, until, catching up with the movement, it rotates at the same rate (just as a swirling motion may be imparted to liquid by rotating the vessel in which it is contained). At this moment, if the rotation of the head is abruptly stopped the movement of the endolymph will continue, but—and here is a point of great importance—the flow of the endolymph relative to its ampullæ will be in the reverse direction to what it was at the beginning of rotation. For this reason the ocular nystagmoid movements during rotation are the opposite of what they become after rotation.

Ewald's experiments showed, as we saw, that the flow of the endolymph from the convexity of the right horizontal canal towards its ampulla induces nystagmus to the right. This is the nystagmus which occurs *during* rotation to the right. Ewald's experiments further showed that the flow of the endolymph from the ampulla of the right horizontal canal towards its convexity induces nystagmus to the left. This is the nystagmus that occurs *after* rotation to the right. Thus the "after-nystagmus" is in the opposite direction to the nystagmus during rotation.

Although both labyrinths are stimulated by rotation they are not stimulated equally. Rotation to the right stimulates the right labyrinth more than the left, and after rotation the left is stimulated more than the right.

We can induce nystagmus in any direction we please by altering the position of the head from the vertical backwards or forwards, and, of course, by rotating to the left instead of to the right.

*The Laws of Nystagmus* are :

(1) Each semi-circular canal induces nystagmus in the same plane as its own (Flourens).

(2) The nystagmus due to rotation corresponds to the line of intersection of the horizontal plane with the cornea.

[During rotation the nystagmus cannot, of course, be seen under ordinary circumstances, so it is of no value as a clinical test. It is the after-nystagmus which is of interest to the otologist, and the

rule of after-nystagmus may be expressed as follows: The direction of after-nystagmus is towards the side from which the patient was rotated.—D. M.]

By inclining the head  $90^{\circ}$  towards the right shoulder and rotating, we induce a vertical nystagmus; by inclining the head forwards or backwards, we induce a rotatory nystagmus, in each case to the right or left according to the direction of rotation.

*The Associated Phenomena* of labyrinthine nystagmus are partly objective, partly subjective.

During nystagmus to the right (*i. e.* after rotation to the left)—

(1) External objects seem to the patient to rotate to the right.

(There are considerable differences in individuals with regard to this sensation.)

As we have seen, the nystagmus is exaggerated or diminished when the eyes are turned in one or other direction. In the same way turning the eyes to one or other side increases or diminishes the apparent movement of external objects.

(2) There is a subjective sensation of falling to the right, especially when the eyes are closed.

Here, as in the last, looking to the right (in the case of nystagmus to the right) intensifies the sensation, and looking to the left diminishes it. In many people the tendency to fall is only felt when they are at rest, and if they get up and walk about it is not experienced.

(3) Although the person feels as if he would fall to the right, on applying Romberg's test it will be found that he actually tends to fall to the left. Thus the movement of the body is in the same plane as that of the nystagmus, and its direction is opposite to that of its rapid phase.

(4) Dimming of vision or a sensation of sparks in the eyes sometimes accompanies nystagmus.

(5) Nausea and vomiting are rare accompaniments of horizontal nystagmus, save in patients suffering from neurasthenia.

(6) Pallor, flushing, palpitation, slowing of the pulse, tremors, etc., may be experienced by nervous people along with rotatory or vertical nystagmus.

(7) Rarely, and then generally in neurasthenic people, consciousness is disturbed.

In examining for nystagmus, allowance must be made for the fact that about 60 per cent. of all normal persons manifest slight horizontal and rotatory nystagmus on extreme lateral deviation of the eyes. Moreover, in patients in whom considerable spontaneous



nystagmus is present, provision must be made to overcome the difficulty of estimating the induced nystagmus. In the former case the use of smoked glasses will obviate the necessity of making the patient turn his eyes to the extreme lateral position; in the latter we ascertain the position in which the eyes are least unsteady, and watch the induced nystagmus with the eyes in that position. Bárány has contrived a simple apparatus for the purpose.

*The Duration of the After-nystagmus* which follows rotation from right to left was found to average forty-one seconds, and of that which follows rotation from left to right, thirty-nine seconds.

An instance is given by the author where scarcely any nystagmus was exhibited after rotation and no vertigo was experienced, although the caloric test showed that the vestibular apparatus was active. Frequently the duration of the nystagmus in individual cases was found to exceed the average considerably. On the other hand, the average was not reached in some cases. Repeated examinations of the same person at different times also gave very unequal results. For details on these and other statistical points the reader is referred to the book itself.

Experience proved that ten rotations in twenty to twenty-two seconds was best, the intensity and duration of the nystagmus being reduced when more or less than ten rotations were employed. After twenty rotations an "after-after-nystagmus" was sometimes seen. The after-nystagmus stopped suddenly and a small nystagmus in the opposite direction appeared and lasted about a minute.

An interesting series of investigations was carried out in order to discover whether habit had any effect in lessening rotation nystagmus. A number of people were examined who were accustomed to dancing, and it was found that persons who danced habitually to the right showed a shortening in the duration of nystagmus to the left following rotation to the right. The reduction affected the horizontal more than the rotatory nystagmus. [In an appendix to the book the author has supplied a series of questions to be answered which bear on the still unsolved problem of sea-sickness. In this connection it would be interesting to ascertain the effect of rotation in seafaring men and those who are immune from sea-sickness.—D. M.]

The theory which has hitherto been accepted as explanatory of the phenomena induced by rotation is that of Breuer, according to whom the series of events may be accounted for by assuming a mechanical pressure effect of the endolymph upon the crista. But

Bárány holds, and with reason, that Abel's theory, which refers all the phenomena to the neurones of Deiter's nucleus, explains the enormous physiological differences in the nystagmus more plausibly than the mechanical hypothesis. Abel assumes the presence of two centres for the production of nystagmus, each governing a movement antagonistic to the other. The variations in results may be regarded as the phenomena of exhaustion of one, or other, or both centres.

*Caloric Nystagmus.*—The caloric test consists in gently injecting water into the external auditory meatus, either above or below the temperature of the body. The patient may be tested lying in bed if he is too ill to sit up. When cold water is used it should be at a temperature of  $30^{\circ}\text{C}$ ., but sometimes it will be found necessary to lower the temperature to about  $20^{\circ}\text{C}$ . If there is a perforation in the membrane, and consequently a risk of infecting the middle ear, cold air may be used as a substitute for cold water.

The results obtained by Bárány by the use of the caloric test are as follows:

(1) In healthy people injecting cold water into one ear sets up horizontal and rotatory nystagmus to the opposite side.

(2) Syringing warm water into one ear sets up rotatory nystagmus to the same side.

(3) When the head is inverted ( $180^{\circ}$ ) the results are reversed.

*Explanation of Results.*—The labyrinth is a vessel filled with water at a temperature of  $37^{\circ}\text{C}$ . When cold affusion lowers the temperature of one side of this vessel a circulation of the contained fluid takes place in accordance with familiar physical laws. If the vessel be inverted the direction of the circulation will be reversed. Bárány details the theory in the following manner: When the head is erect the summit of the anterior vertical canal is the highest point of the labyrinth, while the ampulla of the same canal is situated near the external wall. If this wall is cooled the endolymph passes from the vertex towards the ampulla, and, as Ewald proved, this movement induces nystagmus to the opposite side.

The caloric reactions are modified according to the position of the head, and take place whether the tympanic membrane is intact or not, as long as the labyrinth is active. Any obstacle to the conduction of heat to and from the labyrinth delays the reaction, and may necessitate the use of colder or warmer water. When the vestibular apparatus is destroyed or the vestibular nerve paralysed no nystagmus follows syringing. By the caloric

test, therefore, we can diagnose unilateral destruction of the labyrinth or paralysis of the vestibular nerve.

We may be unsuccessful in evoking a reaction with the caloric test if the external meatus is much stenosed, if thick masses of cholesteatoma shut off the labyrinth from the meatus, or if there is a very acute otitis media and the consequent rapid circulation of warm blood neutralises the cold before it can affect the labyrinth.

From the practical standpoint the caloric test is, without doubt, the method of interrogating the functional activity of the labyrinth which promises to be most useful. It is readily applied, it is free from serious inconvenience, and it gives unmistakable results. As compared with the rotation test it possesses the great advantages that it requires no cumbersome apparatus, that it may be practised on a patient in the recumbent position, and above all, that only one labyrinth is stimulated at a time.

*Nystagmus from Condensation and Rarefaction* of the air in the meatus (the pressure test) is obtainable only when there is caries or a fistula in the external wall of the labyrinth; the reaction is, therefore, produced in a manner analogous to what took place in Ewald's experiments. Siegle's speculum, when it fits the meatus closely, may be conveniently employed for this test. Alterations in pressure in the meato-tympanic cavity, when there is a breach in the external labyrinthine wall, and the vestibular apparatus is intact, is followed by very slow and extensive ocular movements along with a lively nystagmus of several seconds' duration. The pressure test is chiefly of value as supplementing the caloric test, for it has been found that where the caloric test induces little or no reaction owing to interference with the functions of the labyrinth by disease, the pressure test will in these cases produce very small nystagmoid movements. If the caloric test produces a normal reaction and the pressure test also produces minute ocular movements, the diagnosis of fistula must not be made. The important combination which does indicate fistula consists in a negative caloric reaction with a positive pressure reaction.

The direction of the ocular movements indicative of a pressure reaction varies, but in any single case the reaction induced by condensation is always the opposite of that induced by rarefaction. In health no reaction is obtained (*sic*).

*Diseases of the Labyrinth* and the nystagmus tests.

I. *Total Destruction of the Labyrinth*, acute in onset and course.

*Causes*.—Acute purulent labyrinthitis; hæmorrhage into the

labyrinth from arterio-sclerosis or leukæmia; syphilis of the labyrinth; fractures of the base of the skull, etc.

The symptoms are always the same. During the first two or three days there is violent spontaneous nystagmus, rotatory and horizontal, towards the sound side, with all the usual accompaniments—excessive vertigo, subjective movement of external objects, nausea and vomiting. The patient, unable to maintain the erect position, lies supine and on the sound side, a decubitus characteristic of unilateral destruction of the labyrinth and adopted by the patient in order to minimise the nystagmus, and consequently the distressing subjective sensations. The caloric and pressure-tests do not influence the nystagmus in the slightest—a fact which clinches the diagnosis, since it denotes the total abolition of the vestibular sense on the affected side.

In two or three days the symptoms moderate in severity and the nystagmus becomes less—a change preceded in patients with a robust nervous system by the disappearance of the subjective symptoms. After the third day vertigo is only experienced when the head is turned quickly, and the lessening nystagmus is thereby momentarily increased. When the labyrinth is operated on, the symptoms disappear more rapidly than if the disease is left alone, in consequence of the removal of all factors liable to keep up the disturbance of the nerve-centres.

The spontaneous nystagmus is produced by the upsetting of the normal balance of power between the two sides. The stimuli from the diseased side being suddenly withdrawn, those from the healthy side predominate in the nerve-centres and cause nystagmus to the unaffected side.

In about two weeks, the nerve-centres having become accustomed to the lop-sided conditions, spontaneous nystagmus disappears and the case passes into the third stage, that of *latent destruction* of the labyrinth. If the patient is not seen until this stage is reached the diagnosis will depend upon the negative caloric reaction in the affected ear. In cases where the presence of cholesteatomatous masses, etc., raises doubt as to the accuracy of the caloric test, recourse may be had to rotation, as the patient, by this time, is free from the vertigo and other symptoms which previously had kept him recumbent. We saw, when describing the rotation tests, that rotation to one side stimulates the labyrinth of that side more than the other during rotation, while after rotation the opposite holds good. If, therefore, the right labyrinth is out of action, the after-rotation which follows rotation to

the right, dependent as it is chiefly upon the left, or sound labyrinth, will be little, if at all, weaker than normal, while, on the other hand, the after-nystagmus which follows rotation to the left, dependent as it is upon the right or inactive labyrinth, will be less than normal. Expressed as a law, this result reads: In destruction of one labyrinth the after-nystagmus is stronger towards the healthy side than towards the affected side. Bárány finds that this law is invariable, save when some considerable time has elapsed from the date when the labyrinth was destroyed, in which case very little difference can be made out between the sound and the affected side. This is probably due to a falling-off in the irritability of the sound labyrinth, as a result of the destruction of the other. In all cases, however, we can rely upon the following rules as a guide to the state of the suspected labyrinth: If the duration of the horizontal after-nystagmus to the affected side exceeds twenty seconds we can, almost with certainty, exclude destruction of the labyrinth. If the duration of the after-nystagmus to one side is but slightly less than to the other, then nothing is proved, but if the difference between the after-nystagmus to the diseased side and the after-nystagmus to the sound side is considerable (*e. g.* as fifteen seconds is to thirty), then destruction of the labyrinth is almost certainly present.

*Circumscribed Disease of the Vestibular Apparatus.*— (Note that the term “vestibular apparatus” refers to the whole vestibular system, and not only to the labyrinthine portion.) The prominent symptom of this group is vertigo. Bárány, therefore, discusses this symptom in all its bearings, but considerations of space forbid us to give more than a *resumé* of his remarks.

In a patient the subject of vertigo, sufficiently severe to cause him to fall, we may refer the disturbance of equilibration to the labyrinth when we can alter the direction of his fall by altering the position of the head, and when spontaneous nystagmus is present during the attack.

Vertiginous attacks are of two varieties:

(1) Those which occur without any apparent external cause. They are usually violent and prolonged (half an hour or more), with well-marked concomitant phenomena, and during the attack the patient manifests nystagmus to the affected side, less often to the sound side. In the interval between the attacks the patient feels quite well.

(2) Those which are induced by some external factor such as shaking the head, stooping, drinking alcohol, smoking, and so on.

The attacks are mild and last but a few seconds, and although, as in the first variety, nystagmus is present during the attack, malaise and the other concomitants are generally absent.

Both these varieties occur in labyrinthine caries or fistula from acute or chronic suppuration of the middle ear, and are then associated with deafness or tinnitus, or both. In addition to this disease vertigo may be a symptom of a lesion anywhere in the vestibular tract from the labyrinthine end-organ to the medulla, and the nystagmus tests, together with the other signs and symptoms present, will frequently enable us to diagnose the site of the lesion correctly; if, *e.g.*, the lesion lies somewhere in the course of the vestibular nerve between the ampulla and the medulla, acoustic abnormalities will usually be present, but if it lies in the medulla, in the nuclei, or in the connecting nerve-fibres between the nuclei and the cord, etc., then acoustic abnormalities may be absent. It would be wrong, however, to refer vertigo without auditory troubles always to the medulla, for, as is well known, the symptom frequently arises from circulatory disturbances, from toxæmia, and even in persons who are otherwise quite healthy. In this group we may place vertigo from neurasthenia, which is frequently of the typical vestibular type. The differential diagnosis between neurasthenic vertigo and vertigo due to a labyrinthine lesion, such as a fistula, is therefore very difficult at times. In both conditions, complaint may be made of transitory attacks of vertigo on stooping, after getting up in the morning, etc. During our examination of a neurasthenic patient it is but seldom that we have the opportunity of observing an attack of giddiness, but we can induce an attack artificially by rotating the patient on the stool. After rotation, a neurasthenic patient nearly always complains that the giddiness so produced is much more violent than the regular attacks, but if we are careful to rotate him once or twice with his head inclined forward he will recognise the identity of the spontaneous with the experimental vertigo.

In definite lesions of the vestibular tract, such as fistula, etc., the vertigo induced by rapidly moving the head is more violent than in neurasthenia, and, moreover, it is often possible (in 50 per cent. of the cases) to cause both vertigo and nystagmus to the affected side by simply inclining the head backwards, without rotating at all.

Vertigo is a common complaint after head injuries, and from the point of view of insurance and employers' liability is of much

importance, but as the otologist is only remotely concerned with this branch of the subject we do not propose to discuss it.

*Intra-cranial Lesions of the Vestibular Tract.*—As has been said, vertigo and nystagmus can be induced by a lesion of the vestibular nerve within the cranium as well as by a lesion of the end-organ, and the differential diagnosis between the two depends upon the presence or absence of cochlear phenomena. Later, the association of other cranial nerve paralyses renders diagnosis easy, as long, that is, as the excitability of the vestibular apparatus remains normal. In cases where the labyrinthine excitability has been lost, a correct diagnosis may still be made by observing the nature of the spontaneous nystagmus present. When, for example, the right labyrinth no longer responds to the usual tests and marked rotatory<sup>1</sup> nystagmus to the right is present, then we argue that there is some intra-cranial lesion in existence, for the following reasons. Nystagmus to the right is due to irritation of the right vestibular tract. If the tests show that the one labyrinth has lost its irritability and that the other is normal, then the lesion must necessarily lie in the intra-cranium, where it can exercise an influence upon the vestibular nerve-trunk or nucleus. Further, if the nystagmus is arising from irritation of the active labyrinth it will lessen in intensity as time goes on, whereas if the cause is intra-cranial the nystagmus will go on increasing. If, for example, it is found that after a complete labyrinth operation the nystagmus continues to increase, then there must be an intra-cranial lesion. In chronic suppuration of the middle ear the lesion responsible is usually post-basis meningitis, or cerebellar abscess. In the absence of middle-ear disease, a lowering of labyrinthine irritability with nystagmus to the sound side denotes a tumour affecting the auditory nerve.

As a result of further observations on intra-cranial diseases affecting the vestibular system, Bárány states that the ocular signs and symptoms may be grouped in three classes, each corresponding to a different lesion. These are:

(1) When voluntary power over the ocular muscles is lost and all nystagmus is absent, corresponding to a lesion in the medullary nucleus.

(2) When there is loss of voluntary power over the ocular muscles with loss of the rapid phase of nystagmus, but with the slow phase present, corresponding to a lesion above the nucleus.

(3) When voluntary power over the ocular muscles is lost and

<sup>1</sup> "Rotatory" nystagmus must not be confounded with "rotation" nystagmus.

vestibular nystagmus is complete and unimpaired, corresponding to a lesion in the angular gyrus.

The varieties and symptoms of circumscribed lesions of the vestibular tract may be summarised as follows :

(1) Caries of the outer wall (fistula) with normal labyrinthine excitability.

Spontaneous nystagmus may be absent or present. If present it is moderate, rotatory and horizontal in character, and directed both to the right and to the left. In 50 per cent. of cases an attack of vertigo with nystagmus to one side can be induced by inclining the head backwards (see before). The pressure reaction is positive. The caloric test on the affected side shows a typical reaction or a reaction more strongly marked than the normal. Rotation tests give normal reactions.

(2) Caries or fistula of the outer wall with lowered labyrinthine excitability.

Spontaneous nystagmus is moderately marked ; as a rule it is stronger to the affected side. In 50 per cent. of cases backward inclination of the head causes vertigo and nystagmus. Pressure test shows very slight eye movements and no nystagmus. Caloric test on the affected side gives a slight reaction, on the sound side a normal reaction. The rotation tests show the same results as in latent destruction of the labyrinth (*q. v.*).

(3) Traumatic cases with neuroses and circumscribed disease of the vestibular apparatus.

The caloric tests are normal on both sides, and the reaction is combined with violent vertigo, nausea, and sometimes vomiting.

*Indications for Operation.*—We are bound to operate on the labyrinth in every case of severe infection unless the general state of the patient is unfavourable, especially since the operation is not particularly dangerous.

(1) In acute suppuration of the labyrinth.

(a) If there is fever, headache, foul secretion, pains in the mastoid, or periosteal abscess, the complete operation on the mastoid and on the labyrinth must be performed forthwith.

(b) If fulminating symptoms are absent we may, as in appendicitis, either proceed to operate on the labyrinth at once, or wait for from five to ten days (or until we suppose a satisfactory barrier has had time to form between the diseased area and the intracranium).

(2) In latent diffuse suppuration of the labyrinth, the labyrinth operation must be performed at the same time as the mastoid



operation, for this is the condition in which post-operative meningitis is most liable to occur.

(3) In circumscribed suppuration of the labyrinth a decision is not so easily arrived at as in the foregoing. The reason is, that in circumscribed cases the radical mastoid operation is often followed by healing and closure of the fistula. In many patients the vertigo will soon disappear, but in others it will continue for years, sometimes quite trifling in character, at other times so severe as to incapacitate the patient for work. In a minority of cases the disease spreads and diffuse purulent labyrinthitis ensues. In that event, of course, the case passes into Class I, and immediate operation on the labyrinth is imperative. This danger, and the possibility of vertigo continuing after cure of the fistula, render it, therefore, advisable to perform the complete operation as often as possible. In coming to a decision the state of the hearing power should be taken into consideration. If the hearing in the affected ear is bad, the complete operation is to be preferred. If it is good, or if the hearing in the other ear is poor, then it is preferable to avoid interfering with the labyrinth in any way. These conditions apply, of course, only to circumscribed suppuration.

Bárány concludes his treatise with a short description of the recently discovered—

*Contra-rotation of the Eyes.*—During the movement of inclining the head to one shoulder a rotatory nystagmus occurs in the direction of the inclination. When the head is brought to a standstill in the inclined position the eyes undergo an alteration in their position relative to the orbit, and opposite to the position occupied by them when the head is erect. They will be found to have rotated in a direction opposite to the direction of inclination. This rolling movement is labyrinthine in origin, and is altered in disease of the labyrinth. In order to measure the amount of rolling Bárány has devised a complicated and ingenious instrument, and has obtained as a result of his examinations some very interesting results. For details on the point the reader is referred to the book.

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**SPONTANEOUS DISCHARGE OF CEREBRO-SPINAL FLUID FROM THE EAR.**

BY GEORGE F. COTT, M.D.,

Clinical Professor of Otology, University of Buffalo.

THIS condition is of extreme rarity, and when a case of discharge of cerebro-spinal fluid from the nose or ear is reported there is always an element of doubt expressed, unless some competent analysis has proved it to be such. A large number of cases of cerebro-spinal fluid escaping from the nose have been compiled by Dr. StClair Thomson in his book in 1899, in many of which analysis had been made, so that there could be no question of doubt. He, however, mentions only one case of discharge of cerebro-spinal fluid from the ear, which was reported by Escat, of Toulouse (*Archives International de Laryngologie*, 6, 1897).

A second case was reported by the writer in the *Annals of Otology, Rhinology, and Laryngology*, March, 1904. It, however, has not the standing which it would have, had a proper examination been made. I reproduce it here and let it pass for what it may be worth. When I related it to Dr. Panzer, of Vienna, he pronounced it otitis media serosa, while Dr. StClair Thomson was of the opinion that without doubt it was cerebro-spinal fluid.

In September, 1899, I removed a ridge from a septum in a young man, aged twenty-five. There was more or less hæmorrhage for over a week. One evening, while trying to expel some clotted blood, he noticed a slight pain in the left ear, which seemed to him like pressure on the drum-head. During the night the pain became very severe, but, after applying heat a profuse watery discharge suddenly took place, causing immediate cessation of pain. This fluid came away in large quantities and remained clear for several days, when it took on a cloudy appearance. The discharge saturated the cotton which filled the meatus in fifteen minutes, day or night, and had to be removed constantly. After a week the quantity diminished somewhat, ceasing entirely on the eighteenth day. Twenty-four hours later it began again and continued until the twenty-seventh day, when it ceased entirely and gave no further trouble. The hearing, which was impaired during the discharge, gradually recovered, though it did not become as acute as on the right side. However, it is better than it was before the operation on the nose. He had had a buzzing sound in the left ear for years; this was entirely relieved when the discharge ceased,

but has been noticed since then at rare intervals. It was, of course, impossible to estimate the quantity of fluid which escaped, but the patient claims it must have been at least  $\frac{1}{4}$  pint (probably very much more). The patient is very intelligent and I know he does not overstate the fact. In my opinion the cause of the discharge was great pressure on the brain fluid in forcibly blowing the nose brought to bear over the middle-ear, the roof of which remained unossified—not so common an occurrence along the tract of the petro-squamosal fissure. This pressure forced the cerebro-spinal fluid through the fissure, the pain continuing until the drum-head ruptured and allowed the fluid to pass through the external meatus. I believe this to be one of those cases of spontaneous discharge of brain fluid about which otological literature is so conspicuously silent.

The following is a more recent case, in which evidence as to the nature of the fluid seems to be unquestionable.

In March, 1906, I operated upon F. M.—, aged twenty-six, who had a discharge from the left ear since the age of ten. Radical exenteration was therefore done. In the left ear there was principally attic disease, and this was treated by opening the antrum from the external canal, so that it could be washed out without affecting the integrity of the organ because the right ear was quite deaf. He made a fair recovery and went home after two weeks. The ears never stopped discharging entirely, but were kept dry by daily swabbing. About six weeks after the operation he noticed dripping from the left ear a clear watery fluid. There was an itching sensation deep in the ear, where he could not reach, followed by moisture which he noticed on his handkerchief, and a couple of days later by a copious watery discharge, so that he could press out several drops whenever he changed the cotton. One night he noticed that he changed the cotton twelve times, it being saturated each time. He said the discharge came on gradually, but after five days flowed profusely and lasted for seventeen days, twelve days constantly. While he was in my office I collected ten drops in three-quarters of an hour. This was examined by Dr. Bentz, the bacteriologist, who found it to be cerebro-spinal fluid containing isolated staphylococci and a few diplococci, coming no doubt from the external canal. It was impossible to locate the exit of the fluid from the skull, where the itching was found to be confined to a spot one eighth of an inch in diameter on the internal wall of the middle ear at its junction with the floor. No other place could be excited.

With regard to the later history of these cases, I can report that both patients are well now; no recurrence of the discharge. Hearing improved in the first patient and was not influenced in the second.

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## A CONTRIBUTION TO THE TREATMENT OF ACUTE CATARRH OF THE NOSE.

BY DR. R. SPIRA,

Director of the Department for Diseases of the Ear and Nose,  
Jewish Hospital, Krakau.

It is known to all physicians what difficulties the treatment of the above-mentioned trouble presents, while the remedies recommended for it are numerous. Nevertheless, there is not one among them which can be used to the full satisfaction of the patients, nor one hitherto proved to be entirely effectual. It is therefore natural that the physicians should still be always seeking and looking out for a remedy which could be used with full satisfaction.

I will not mention, and will rather look away from, the trials and experiments I have made with different remedies and methods in this disorder. I will rather place before the readers of this JOURNAL the experience I have lately had with a new remedy.

In cases of acute catarrh of the nose, and especially violent dry colds, causing stoppage in the nose, I have seen such excellent results obtained with adrenalin inhalant, that I consider it my duty to draw attention to this preparation. This consists of one part of adrenalin hydrochloride to 1000 parts of a very pleasant scented, aromatic neutral oil basis with 3 per cent. chloretone, which is prepared and brought into the market by a well-known firm of chemists in London. It is a familiar fact that considerable relief can be obtained with any supra-renal preparation in combination with a cocaine solution in such cases. But, firstly, this effect is only a passing one of short duration, secondly, these remedies, if used often, have various inconvenient and unpleasant after-effects, which render the frequent application inadvisable. With adrenalin inhalant the effect is more lasting, and then, if not used too often, it is free from unpleasant after-effects. This medicament should be applied in the form of sprays in the nose, or by painting the nasal mucous membrane two or

three times a day by means of a piece of a probe enveloped in wadding and dipped into the solution.

At intervals I am in the habit, from time to time, of painting the mucous membrane of the nose with coryphin, a menthol-ester produced and brought into trade by a well-known firm at Elberfeld, which has proved to be a remedy with agreeable, healing and advantageous properties.

Who does not know the extremely painful condition accompanying the "stoppage in the head"? In the nose there is a burdensome feeling of fulness, straining and often also of tickling, the mouth open, the throat dry, the eyes heavy, dull and burning, the head stupid and disturbed. In the region of the forehead and temple a sensation of overcharging and obtuseness, mental heaviness, the slumber uneasy and interrupted, or even impossible.

In that state I have found, especially before going to bed, when all these complaints are apt to be at their worst, the following proceeding exceedingly effective and beneficent: Painting the nasal mucous membrane with the above-mentioned preparation, or instilling a few drops of it into the nose, brushing the region of the temples and the brow with coryphin, and taking aspirin (0.5 grm.) internally; (per os). The nose becomes quickly pervious, the head free and clear, the eyes brighten as if relieved from a heavy pressure, and the breathing becomes also lightened and easy. The patient feels himself greatly relieved, and reanimated, and with the return of respiration through the nose sleep again becomes possible, and calm and easy.

It is likely that this remedy may be proved in many cases also as a very effective prophylactic against the complications of the hearing organ which so often occur.

In the acute catarrh of the nose in suckling babies, in whom this disease, on account of the difficulty in taking of nourishment, involves sometimes a very grievous affection, and which may even be dangerous to life, I have not as yet tried this remedy. I order from time to time as hitherto, with good success, particularly before going to bed, instillations into the nose of one to two drops of a 1 per cent. solution of cocaine, to which is added adrenalin in the proportion of one drop to ten of the solution. Through the momentary detumescence of the mucous membrane thus brought about, the permeability of the nasal cavities is restored, feeding again becomes possible, and sleep, hitherto disturbed and uneasy,

is again calm and easy. At any rate, however, it would be recommendable to try also in such cases a diluted oily solution of adrenalin inhalant.

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### STREPTOCOCCAL ("SEPTIC") THROATS.<sup>1</sup>

#### ANNOTATION.

DR. J. O. HOLLICK, medical officer to the Midland Counties' Idiot Asylum, gives an interesting account of an outbreak which occurred in that institution in 1908 of a pharyngitis and tonsillitis of an infectious nature, at first thought to be due to the Klebs-Loeffler bacillus. Subsequent examination showed, however, an absence of diphtheria bacilli but plentiful streptococci and staphylococci.

The general symptoms were as follows: Feeling of malaise, pains in the back and in the neck up to the occiput, and headache. The evening temperature often rose to 104° F. and the morning temperature to 100° F. Slight soreness on one or both sides and difficulty of swallowing; the submaxillary and glands adjacent to the angle of the jaw and in the triangles of the neck were slightly enlarged and tender. Tonsils showed creamy-white secretion with angry-looking areola of inflammation extending to the anterior pillar of the fauces, the uvula swollen and intensely œdematous. No follicular exudation on the tonsils. The urine was febrile, and in some showed slight trace of albumen. In from two to four days the symptoms and local signs decreased, the glandular swelling and tenderness remaining for some days after the clearing up of the throat symptoms. In connection with this epidemic two cases of cutaneous erysipelas of the foot and leg occurred. Several of the patients with the throat symptoms and glandular enlargements showed a tendency to relapse if allowed to get up within too short a period of subsidence of temperature.

With regard to treatment, all were isolated at once on rise of temperature, or on complaint of soreness of throat, and owing to this precaution in a colony of 160 people only 15 were affected with the malady. Formamint lozenges were sucked (three a day) by all not affected, and by those affected a lozenge every three hours, while frequent swabbing of the tonsils and pharynx with "izal" solution (suitably diluted) was resorted to. All cups, spoons, etc., used by the affected inmates were sterilised in formalin solution after use. In addition to the swabbing, spray-

<sup>1</sup> *Lancet*, December 19, 1908.

ing of the pharynx and nares with the formalin spray was also carried out.

A similar, but more severe, epidemic occurred at a private preparatory school. There was a history, before the commencement of the epidemic, of one boy returning to school who had had sore throat which had imperfectly cleared up. In from two to three weeks later a boy was seized with convulsions. His temperature was 103° F.; he complained of no sore throat, but his cervical glands were enlarged and tender. He was isolated at once. Next day he had a creamy secretion over both tonsils but not extending on to the palate or faucial pillars. There was much angry congestion over the latter.

Four other boys on this day were put to bed with rise of temperature, tenderness over the cervical glands, headache, malaise, and some pain on swallowing on one or both sides. One of these showed a more suspicious look about his fauces and tonsils than the rest, and he had signs of much nasal obstruction. A swab from his throat showed Klebs-Loeffler bacilli. He was treated with 4000 units of antitoxin, but succumbed fourteen days after onset of symptoms to cardiac failure.

Swabs from other throats showed Hofmann's diplococci and streptococci but no diphtheria bacilli. One boy, and only one, had middle-ear trouble ending in suppuration, with no mastoid complication. A feature of this epidemic, and one that was so very striking that the veriest tyro on throat affections could not have failed to notice it, was the comparative slightness of the internal (tonsillar and pharyngeal) signs in the older boys of from twelve to fourteen years of age, with, in some cases, no secretion or exudation, and the mildness of their constitutional symptoms; while the younger boys of from ten to twelve years of age had sharp febrile disturbance, with much pain in the throat and glands and took much longer time to convalesce, whilst the subsequent anaemia was often very marked. Some showed signs of heart dilatation. Others, again, had albuminuria, mostly of a very transient nature, only lasting from three to four days. There was no doubt about the izar swabbings and sucking of formamint doing good in checking the amount of secretion and local pain on swallowing. In several the pharyngeal tonsil and adjacent lymphoid tissue showed signs of congestion for from two to three weeks after disappearance of throat discomfort, and the nares were in a few cases slow to resume their normal appearances.

Haematogen and maltine with iron ("brynophosphates") seemed

to do most good as an after-tonic. A noticeable feature of the epidemic was a slight pharyngitis experienced by the adult people (masters and servants) of the school with no serious constitutional disturbance.

A streptococcal throat infection is not to be treated lightly, owing to the persistent and clinging properties of the micro-organism resulting in much adenitis and subsequent constitutional disturbance and anæmia.

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## SOCIETIES' PROCEEDINGS.

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### PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

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*Friday, January 8, 1909.*

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DR. DUNDAS GRANT, *President, in the Chair.*

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*Abstract of Proceedings by DR. DAN MCKENZIE.*

DISCUSSION ON THE MODERN TREATMENT OF SYPHILIS, ESPECIALLY IN REGARD TO THE UPPER RESPIRATORY PASSAGES.

INTRODUCED BY DR. LIEVEN (AIX-LA-CHAPELLE).

Dr. LIEVEN,<sup>1</sup> in the course of his remarks, said that considerable progress had been made in the diagnosis of syphilis owing to the discovery of the "*Spirochæta pallida*" and of the anti-bodies peculiar to the serum of syphilitic persons (Wassermann, Bruck, Neisser). Little change had, however, been made in the treatment. Mercury and iodides were still the most important and reliable remedies, no therapeutic serum having as yet been elaborated and arsenic not having as yet established a claim to reliability.

Mercury had been proved by Neisser to kill the microbe and to assist the organism to defend itself against it. It rendered the blood of an infected animal non-infectious and it rendered a cured animal susceptible to re-infection. Similar results were obtained by means of atoxyl, but the large doses required were dangerous to the optic nerve.

<sup>1</sup> Dr. Lieven's paper will be published *in extenso* in our next issue.



Mercury could be given by the mouth, by subcutaneous or intra-muscular injection and by inunction. He considered the oral method insufficient and specially apt to produce troublesome stomatitis and colitis.

Of substances for injection some were soluble, others insoluble. Of the former he preferred the French biniodide of mercury (2 per cent. solution) of which 15 m was administered daily for twenty to thirty days. The drawbacks were the frequent visits and the rapid disappearance of the mercury with tendency to relapses.

The chief insoluble mercurials were calomel, grey oil and salicylate of mercury. The two former were of a strength of 40 per cent., and were administered by means of Barthelémy's syringe, of which up to eight divisions in the case of calomel and twelve of grey oil may be injected. Six to eight injections of the calomel and ten to twelve of the grey oil or eight to ten Pravaz syringefuls of the salicylate constituted a course. Calomel was the most reliable but the most painful, and might be kept for "malignant" cases. The salicylate was free from danger. The injection should be given in the upper and outer quadrant of the buttock above the level of the trochanters. Dr. Lieven showed a large syringe working steadily by means of a rack and pinion.

Inunction was the mode universally preferred by German practitioners in spite of its uncleanness. Grey ointment of the strength of 33 per cent. to the amount of 4 or 5 gm. each time is rubbed in by means of the bare hand for at least twenty minutes. The patient rubs it into the calves, the thighs, the abdomen, and the arms on five successive days. On the sixth day the whole body is washed with soap and water in a bath. This constitutes a course, which is repeated as often as required.

At Aix there was a daily bath in the thermal waters, the temperature of which is, however, too low to remove the ointment unless the skin is rubbed with soap. In inunction the mercury is rubbed into the pores of the skin, undergoes chemical change and circulates in the blood as an albuminate. The enhanced metabolism induced by the baths favours the free absorption and distribution of the remedy.

The toxic effects of mercury on the colon and mouth could almost certainly be prevented by ensuring a thorough action of the bowels every day. If there was diarrhœa, 25 m of laudanum, repeated if necessary in six or eight hours, along with the removal of the ointment by a bath, would suffice to stop it. Regarding the mouth, the teeth were cleansed with a tooth-paste of salol and potassium

chlorate. The mouth should be rinsed every hour with a solution of aluminium acetico-tartaricum. Mercurial ulcers on the gums are cured by a concentrated solution of chromic acid.

Iodine, the remedy of the tertiary stage, was also useful in the secondary vegetations which occur on the floor of the mouth and at the entrance to the nose.

Iodide of potassium should always be employed when a rapid action, for therapeutic or diagnostic reasons, was desired. The drawback of severe iodism could often be prevented by the daily ingestion of 15 gr. of sulphuric acid in 7 oz. of water.

If potassium iodide by the mouth proved intolerable the speaker gave sajodine, three to eight tablets a day; or iodopine, hypodermically, in 20-30 grm. doses three times a week, until 250 grm. had been given. This quantity put the system under a mild iodism for about six months.

Concerning the arsenical compounds, the speaker said that atoxyl (sodium-amyl-arsenate) had been abandoned in Germany on account of its toxic effects. As a substitute soamin (sodium para-amino-phenyl-arsenate) in England and arsacetin (acetyl-anil-arsenate) were at present under trial; consequently the speaker could not recommend their routine use. Neisser was right when he said that twenty years of experience were necessary before we could estimate the therapeutic value of arsenic.

In doubtful cases we ought to wait until the diagnosis had become assured before beginning treatment, because primary chancres of the upper respiratory tract were very difficult of diagnosis. The serum test might be resorted to in these doubtful cases, but the positive sero-reaction could not be obtained until some weeks had elapsed from the primary infection. A suspicious sore in a prominent place, or appearing after close contact with a person known to be infectious, might be regarded as definitely syphilitic in some cases.

The speaker detailed the method of innction in vogue at Aix. Internal treatment was not used until after the period of innction passed, and then the patient received pills of tannate of mercury for two years.

Generally speaking, local treatment was quite unnecessary if general treatment was vigorously carried out. In the case of primary chancres of the alae of the nose, however, such mild topical applications as a mercurial plaster were useful in minimising the amount of scarring left. In intra-nasal cases euprophen might be found useful. The cautery should never be employed for primary

sores of these mucous membranes. Orthoform and anæsthesin were valuable remedies, relieving the pain and soreness of primary and particularly of secondary throat lesions. When it was desirable to make local applications to sluggish secondary throat ulcers he used concentrated solutions of chromic acid applied after careful drying of the part. The eschar left after the application was soon washed off, especially if there was much salivation, but it could be rendered more adhesive by applying silver nitrate on top of the chromic acid. Sometimes belladonna would be found serviceable in moderating salivation in these cases. The most frequent cause of relapses and recurrences was smoking. It was his constant experience to find that the mucous patches ceased to form when smoking was given up.

Turning again to the general treatment, he found it necessary, especially in severe cases, to give a course of iron at the end of the first year.

From the point of view of laryngology, syphilis was seldom seen until the tertiary stages. For these late effects of the disease he advised iodides in doses of not less than thirty grains *per diem*. The substitutes for, and modifications of the iodides were slower in their results. After the tertiary ulcer begins to heal under the iodides he advised that mercury should be given in their stead, and at a later date iodipin should be given in order to prevent recurrences.

Allusion was made to the so-called "malignant" syphilis, where, a few months after the primary sore, deep ulcerations appear and defy treatment and where the remedies were ill-borne. In such cases the iodides should be stopped and injections of calomel given. After a few weekly injections of calomel he returned to the usual tertiary remedies. Locally, treatment was unnecessary, save when, *e.g.* in the nose, sequestra required removal, and when, *e.g.* on the posterior pharyngeal wall, where the healing power was deficient, tincture of iodine was used to stimulate the ulcer. Sequestra should not be removed until they were quite loose. Adhesions between the posterior pharyngeal wall and the soft palate might require separation, and there were many methods employed to prevent a renewal of the adhesions after they were divided. Whatever plan was adopted it should be remembered that the insufficiency, paralysis or permanent removal of the soft palate led to the regurgitation of food and drink through the nose, and was a source of greater discomfort to a patient than inability to breathe through the nasal passages.

In tertiary laryngeal syphilis the general treatment must be smart in order to avoid the strong tendency to cicatricial stenosis. When the local lesions in the larynx assumed the form of vegetations and tumours and dyspnoea was thereby induced, energetic general treatment was indicated, and not the removal of the exuberant vegetations.

Finally, in order to reduce the local glandular swellings in primary and secondary syphilis of the upper air-passages they should be rubbed with 7 gr. of ung. hydrarg. for fourteen days from time to time.

Colonel LAMBKIN had been first introduced thirty years ago to the Aix treatment of syphilis by innunction, and became convinced that the proper channel for the administration of mercury was the skin. In consequence, he had carried out as well as he could the innunction method in England. But it was uphill work. In the Army it was useless to attempt treatment by innunction unless a second man was employed to do the rubbing. The rubbing should last for twenty minutes, and as it was very hard work, without doubt the treatment was shirked. At Aix the professional rubbers were reliable. If unreliable, the fault was easily discovered and rectified.

In civil life, again, it was very difficult to obtain efficient innunction because nurses objected to it, fearing that they might themselves become infected. It was a dirty method. It took up much time and did away with all possibility of secrecy. Otherwise, and as carried out at Aix, it was a method which gave excellent results. To order a patient to rub in 5j of mercurial ointment himself was merely playing at treatment. He might as well rub it into the wall. Still, even with all these drawbacks the speaker fell back on innunction at times, for example, when induration about the site of infection persisted in spite of treatment. When innunction was employed, the Aix method should be closely followed—baths, innunction, mouth-wash, and rubber.

The method he now systematically employed was that of intramuscular injections. He preferred calomel since he had obtained it in combination with creosote and camphor because the injections were then painless. Calomel injections caused the most rapid disappearance of the signs of the disease, but it returned more rapidly again than when the salicylate or the metal itself was injected. He injected  $\frac{3}{4}$  gr. calomel once a week for four weeks. In 90 per cent. of the cases all the symptoms disappear. Then metallic mercury was substituted for calomel because its absorption

was slower and its effects were less evanescent. The objection to the intra-muscular method of administration, that the metal or its salt was deposited in the tissues and was difficult to remove when toxic symptoms arose, was perfectly valid. He had never seen abscess or embolism result from the intra-muscular injections. The site selected to receive the injection was the upper third of the buttock on either side alternately. The pain of the needle-prick was a drawback and frequently prevented patients from keeping on with the treatment, as Fournier had pointed out. The speaker thought that the usual plan of inserting the needle alone first of all and then transferring it to another spot if blood dropped from it was unnecessary, and increased the amount of pain to be endured.

In the local treatment of lesion of the upper respiratory tract he employed chromic acid solution (20 gr. to the oz.) sometimes with silver nitrate, and if they did not quickly respond he curetted them. He had found the curette of great service even in early secondary lesions.

Regarding the modern arsenic treatment the satisfactory results were unquestionable, and its action was even more rapid than that of calomel. Arsenic prevented the development of the secondary throat lesions even in cases where they might be expected. He had tried atoxyl in 120 cases and had seen no bad effects, but when he went to Uganda he saw there toxic symptoms which had made him shy of continuing that drug on his return. He had replaced it by "soamin," and latterly, on the advice of Prof. Neisser, by "arsacetin," an acetyl compound of soamin, and preferable to that drug in that its solutions were stable.

SIR FELIX SEMON'S experience corroborated Dr. Lieven's. Many years ago he had expressed the opinion that small doses of mercury by the mouth do not protect against severe tertiary syphilis. Nearly all tertiary cases he had seen gave a history of having taken hydr. c̄ cret. for two years or longer. He agreed with Dr. Lieven that in the great majority of cases of syphilis of the pharynx and larynx no local treatment was necessary. The constitutional treatment was all-important. He expressed surprise that Col. Lambkin should have resorted to such heroic methods as curetting. Where sequestra had formed, of course, local treatment was called for, but in ordinary cases of secondary and even tertiary syphilis there was no need for local applications.

He thought that the early cases of malignant syphilis were not sufficiently recognised. They were characterised by severe lesions

within the first year, coupled with an intolerance both of mercury and of iodine. He had dealt with the treatment of these cases in the *British Medical Journal* some years ago, and had recommended the use of sarsaparilla very highly. He hoped that Dr. Lieven would explain the sero-diagnosis.

Major FRENCH practised the inunction method at Woolwich. One drachm of ung. hydrarg. was rubbed in daily and a bath was given every day. Inunction was the method in vogue in the armies of the Continent, but was not so frequently employed in this country. Administration by the mouth should be reserved for prophylaxis only—to guard against relapse. Locally, he found that if smoking was stopped the ulcers soon disappeared. He found that early malignant syphilis was nowadays more common than formerly, and the cases he saw were mostly imported from abroad. The influence of inunction was seen in the reduction of glandular swelling, in the increase of weight, etc. These results corresponded with Cabot's discovery that under mercurial treatment the red corpuscles increase in number for three weeks and then decline. At the twenty-fifth inunction if the weight was beginning to fall off he intermitted the rubbing. The dieting was important. Their patients in the army were strong, well-nourished young men, and the treatment obtained a more rapid hold when the diet was lowered. He gave iodides between the courses of inunction, and ascribed the beneficial action of remitting from their employment to the elimination of mercury.

Mr. BEDDOES was distinctly of opinion that the most reliable method of treating syphilis was by the mouth, and this although the specialists were against it. The fact was, that the cases seen by the specialists were those which had intermitted treatment, or for which the ingestion treatment was unsuitable. The mouth should be cleansed before mercury is begun and then it causes no anxiety. Judging from the fact that the final results of syphilis, tabes and general paralysis, were more common on the Continent than in England, he argued that the ingestion treatment most in vogue in England was quite as satisfactory as inunction. At the same time inunction was most suitable for some cases, but an attendant was necessary to give the massage, whether with or without mercury. The Aix treatment included the use of sulphur, an old remedy in syphilis, as the "Chelsea Pensioner" showed. The speaker, turning to the injection treatment, pointed out that the high specific gravity of the mercurial solutions and mixtures necessitated care in the dosage. For example, 2 m of grey oil,

supposed to represent 1 m of Hg., really contained much more. Although phenol was satisfactory in that it prevented pain after injection, he found that grey oil made by a good chemist was quite as satisfactory. He preferred calomel put up in bulk and not in ampullæ, since in the latter the salt deposited and adhered to the glass. It had been objected that, when given by the skin, mercury albuminate was found, but he pointed out that in Zittmann's treatment the mercury is in the form of the albuminate. In malignant cases with much swelling of the lips and tongue, necessitating tracheotomy perhaps, the atmosphere surrounding the patient should be kept moist.

Of the soluble salts the salicyl-arsenate, in his opinion, was the most satisfactory. In the ingestion treatment opium was sometimes combined with mercury. This should only be done if symptoms required it. On the continent, he believed, opium was used from the beginning of the treatment. Mercurial plaster used in alar chancres should be spread on white leather. Adhesions between the soft palate and post-pharyngeal wall were troublesome, but he had found adhesions in the external auditory meatus still more annoying. The sites that he preferred for injection were: The buttock when the patient was in bed, and the loin when he was walking about.

Dr. HAROLD BARWELL pointed out how difficult it was to apply the Aix and army treatment to private patients. He thought that the ingestion treatment was quite satisfactory. Sir Felix Semon had, no doubt, found that nearly all his severe tertiary cases had been treated by the mouth, but then it should be remembered that nearly every case in England would be so treated, and this, of itself, would explain Sir Felix Semon's experience. What the members of this Section were interested in was the rapid treatment of severe throat lesions. Little had been said of the intra-muscular injection of soluble preparations. The objection to them had been the pain they caused, but he had found that mercuric (not the mercurous) benzoate 1 per cent. with Na benzoate  $2\frac{1}{2}$  per cent. formed a painless combination, which he injected in doses of  $\frac{1}{3}$ - $\frac{1}{2}$  grain every day or every other day. Most cases reacted well to it.

Dr. DONELAN held that it was impossible to carry out in England the Aix treatment according to Aix rules. Inunction was the only treatment of real value. At the Italian Hospital the Aix methods, modified to suit the altered circumstances, were carried out. The proof of the mercurial treatment was to be found in its

physiological effects. Mercurial ointment was rubbed into the groins and axillæ three nights a week for three weeks. This was followed by a course of iodides. In no case was the effect of Hg. not produced. He had tried the soluble injections and had experience of the results of injections in the patients, mostly waiters, who attended the Italian Hospital, and who had frequently been treated by injection in all parts of the world. His experience had shown him that recurrence of symptoms was no less liable with injections than with innctions. Another objection to the intra-muscular method was that abscesses sometimes resulted. Regarding tabes and general paralysis the speaker mentioned Ford-Robertson's discovery of bodies which that observer looked upon as the cause of these diseases, however syphilis might predispose to them. In tabes, according to Ford-Robertson, the infection reaches the spinal cord from the bladder, and in general paralysis of the insane through the nasal mucosa.

Mr. STUART-LOW narrated some cases exemplifying important points in the treatment of syphilis. In one, a male, with an ulcerated throat which had withstood treatment, innunction brought about recovery in a fortnight. In another, the cleansing of the teeth, orthoform locally, and innunction led to improvement, but it was not until he practised a device of Sir Felix Semon's, viz. stopping the mercury suddenly, that recovery ensued. In another case of necrosis of the nasal septum he had syringed iodipin into the nose with much success. The lesson to be learned from these cases was that each case should be treated on its own merits, either in the old or in the new way, according to the results obtained. Among the old remedies he had found much benefit from the use of Donovan's solution in large doses (m x-xx).

Dr. STCLAIR THOMSON was sure that syphilis often got well without any treatment at all. He preferred the skin to the mouth as the channel of administering mercury. It should be remembered that Hutchinson had only recommended ingestion, not as the best, but as the most convenient method of treatment. Col. Lambkin and Major French found benefit by putting patients to bed, and he was able to confirm their experiences from the practice at Golden Square. In cases of dyspnœa from laryngeal obstruction, for example, it was often found at Golden Square that by putting the patient to bed and practising innunction or injection, tracheotomy was avoided. In some cases, however, the operation was inevitable, and it was remarkable how rapidly the laryngeal disease would disappear after the operation. In congenital syphilis



inunction was particularly reliable, and contrasted markedly with the hyd.  $\bar{c}$  ret. method, which, he was convinced, had no influence in preventing interstitial keratitis and deafness.

Mr. SCANES SPICER expressed the indebtedness of the Section to the various speakers, who had contributed so much to their knowledge of the newer methods of treating syphilis. Still, he wondered how far they were preferable to the older method. He remembered some striking results obtained from the use of calomel fumigations. He was sure the British public would not submit to systematic inunction or injection. Compared with the cases of twenty-five years ago those to-day were mild. One never saw rupia as in those days. This was the result of more efficient treatment. Before giving iodides care should be taken that the nasal passages were clear, and in ulcerations of the pharynx, in particular, it was important to obtain a free nasal passage, as was proved by a case he narrated.

Dr. DAN MCKENZIE drew attention to the difficulty of deciding upon the question of the efficacy of any particular method of treating syphilis. Syphilis was a disease spun out over long years, and the medical man who treated the "tertiaries" was but seldom the same individual as he who had treated the "secondaries." Thus the patient's word as to what treatment had been adopted and as to the result was in many instances the only guide to the nature of the early treatment. And our condemnation of the older methods rested but too often upon that slender basis. It was, in his opinion, questionable whether any method of treatment could be confidently relied upon to prevent severe tertiary symptoms in all cases. For this reason he held that medical men should withhold their judgment on the comparative merits of the old and the new therapeutics until they were able by the definite results of large numbers of experiments to determine the best remedial agent and the best remedial method. The treatment of syphilis should not be decided solely by impressions and opinions.

Turning to syphilis as it affected the pharynx, he, like the previous speakers, had frequently obtained rapid benefit from the use of calomel injections. In a number of cases under his observation he had used calomel suspended in paroline without causing pain and without producing abscesses. In obstinate pharyngeal ulcers the mouth and teeth should receive attention in order to minimise the effect of sepsis. He condemned the routine administration of mercury in pill form, for it was impossible to make sure that pills were always digested and absorbed.

Dr. LIEVEN, in reply, detailed the principles underlying the serum diagnosis of syphilis.

It had been shown that if the sero-test was positive the presence of syphilis was indicated, while if the test was negative syphilis was generally (in 80 per cent.) absent. The reaction had proved serviceable in doubtful cases. It was to be noted that a positive reaction indicated that the patient was suffering from or had suffered from, syphilis, but it did not prove that he was infectious. The antibody, upon whose presence the positive reaction depended, seemed to outlast the spirochaeta in the body. Consequently a positive reaction did not constitute in itself a reason for forbidding marriage.

The sero-test had been investigated both by Bauer and Wassermann with similar results, but Bauer's method was the more accurate. It had proved of much value in infancy when the question of a wet nurse had to be settled.

#### CONGRATULATIONS TO SIR FELIX SEMON.

Before the close of the meeting the PRESIDENT offered to Sir Felix Semon the hearty congratulations of the Section on the attainment of the twenty-fifth year of its existence by the *Internationales Centralblatt für Laryngologie*, which he had founded and had edited continuously and with eminent success. Laryngologists throughout the whole world were indebted to him for the publication of this, which was admitted by all to be the only exhaustive chronicle of contributions to laryngology—the index laryngologicus *par excellence*.

Dr. SCANES SPICER, in endorsing these congratulations, stated how indispensable the *Internationales Centralblatt* had proved to all who wished to write papers on laryngological subjects.

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## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

*Fourteenth Annual Meeting, held at Pittsburg, Pa., May 28, 29, and 30, 1908.*

DR. EWING W. DAY, *President, in the Chair.*

### SYMPOSIUM ON THE COSMETIC AND PLASTIC SURGERY OF THE NOSE, THROAT AND EAR.

#### *The Plastic Surgery of the Nose.*

DR. JOSEPH BECK, of Chicago, read this paper, which was illustrated with stereopticon pictures showing the various deformities before and after plastic operations.

The various external nasal deformities commonly encountered were classified as follows:

(1) Those due to marked deflections and irregularities of the septum.

(2) Those dependent upon a deformity of the structures of the external nose, as the nasal bones, nasal and alveolar process of the superior maxilla, and the alar cartilages, columna, with the skin covering all the above-named structures. This includes the vestibular areas.

Of the first group one of the most frequent deformities is the twisted or crooked nose, with which there is usually associated a hump. Other varieties of the deformities of the first group are: the notched nose, in which the bridge, made up of the cartilaginous septum alone, is caved in; the squashed or flattened nose, due to traumatic severance of the anterior triangular cartilage from the bony septum, and another, similar to the preceding, in which there is a congenital absence of the maxillary spine and underlying bony tissues of the alveolar process.

Of the second group, dependent upon affection of the external structure, may be mentioned the following:

(1) The large hump nose; (2) the broad flat nose; (3) marked saddle nose not due to a pathological condition; (4) saddle nose due to pathological conditions, notably lues, congenital or acquired; (5) the so-called pushed-in nose, where the nasal bones are not affected; (6) traumatic destruction and irregular deformities which must be described individually; (7) unilateral deformity, usually right, through the alar region, frequently resulting from tuber-

culosis, sometimes from lues; (8) hare-lip nose, unilateral or bilateral; (9) pinched nose, resulting from cicatrices following lupus; (10) pound nose, a true pathological condition of an atheromatous character, found most frequently in chronic alcoholics; (11) hacked-off nose, rare in this country, but common in certain oriental countries where the deformity is inflicted as a punishment, the tip of the nose being hacked off; (12) exulcerated nose and face, usually congenital, taking the form of granuloma.

Dr. Beck next outlined the principles of plastic surgery, especially where flaps are used, as follows:

(1) Proper measurements of the flaps must be made as to their shapes and sizes so as to cover the defects.

(2) Always allow for shrinkage of flaps.

(3) Do not make the flaps too thin and thus jeopardise their life. When pedicles are used, see that they are not too narrow, so that plenty of blood supply enters the flaps.

(4) Do not twist the pedicle too acutely, and thereby strangulate the flap.

(5) Thoroughly freshen the surfaces of the defective area and undermine the edges properly so as to insure good union of the flaps.

(6) Never use much tension on the flaps; a counter-incision in the vicinity may be necessary to relieve tension.

(7) Perfect adaptation of the wound edges is imperative, and exact suturing is desirable; at the same time do not place the sutures too close to one another, because death of the edges may take place from strangulation.

(8) The finest of needles and suture material should be used. Horsehair makes an excellent material. Handle the flap with great care by not using too large rat-tooth forceps.

(9) If, in the next day or two, the flap looks anæmic and œdematous or blue and blistered, one may have to relieve some sutures and apply warm compresses. A few small punctures with the knife in the œdematous skin is at times of value.

(10) Time is an important element in these operations, in that it requires a good deal of it. Do not work too fast.

The indications for the correction of the external nasal deformities are:

(1) To establish a proper respiratory organ and to correct all the pathological conditions dependent upon the imperfect ventilation and drainage. These are the cases that obstruct the anterior nares principally.

(2) For cosmetic purposes (*a*) where the deformity is of such type as to prevent the individual from being permitted to associate with other people, and (*b*) purely for cosmetic purposes, operations of this class not being advocated, but merely mentioned for purposes of discussion.

The methods which may be employed in the correction of external nasal deformities are principally of two kinds, viz.: (1) Intra-nasal or intra-vestibular, and (2) external. The latter only are considered in this paper. These are: (1) Indian methods; (2) Italian methods; (3) German or French methods; (4) Miscellaneous methods.

A series of cases illustrative of the results of treatment by the different methods were represented on the screen.

*The Correction of Nasal Deformities by the Intra-nasal Method.*

Dr. JOHN O. ROE, of Rochester, N. Y., presented this phase of the subject, confining his remarks to a consideration of the subcutaneous method, which does not involve injuries to the skin, except where it is necessary to remove unsightly scars. After a brief consideration of the various etiologic factors attention was called to the importance of determining the exact nature of the deformity, the condition of the tissues and the anatomical structures, both external and internal, which are affected by, or which enter into, the deformity, in order to intelligently advise as to the desirability of the operation and the probability of its being a success. In all cases where the deformity of the nose is associated with or caused by a constitutional condition, such as lues, no attempt should be made to correct the deformity until the constitutional condition has been most thoroughly treated and all manifestations thereof removed. If associated with local disturbance inside the nose, obstructing the passages, such as spurs, enlarged turbinates, polypi, adenoids and tonsils, these conditions should be remedied before plastic surgery is undertaken. Having determined upon the advisability of operation, the operation itself must be carefully studied as related to the condition and position of the tissues, the relation of the different parts of the nose to one another, and the relation of the shape of the nose to that of the face. The author here gave a classification of the various external nasal deformities, showing pictures illustrative of each and detailing representative cases.

In the correction of nasal deformities by the subcutaneous

plastic method quite as much care and patience must be exercised as by the external skin-flap method. If too much tissue were taken from any particular part a depression would result; if too much were put in a lump would be left. If the skin were injured an undesirable scar, or redness, or other disturbance of the skin would result; subcutaneous wounds were quite as slow to heal as external wounds, often more so because of the disturbance of the circulation.

*The Correction of Nasal Deformities by the use of Paraffin.*

Dr. HARMON SMITH, of New York City, read this paper. In consequence of the great amount of adverse criticism brought to bear upon the subcutaneous injection of paraffin, and of the many dangers enumerated as possible sequelæ to its use, he had instituted a personal investigation of the subject, sending out circular letters to all those engaged in this work, asking information upon the following points:

(1) Total number of cases injected for the correction of nasal deformity.

(2) Number of successful cases.

(3) Number of unsuccessful cases.

(4) Attributable cause of non-success.

(5) Number of cases of blindness due to embolism.

(6) Number of cases of sepsis resulting in abscess and loss of paraffin.

(7) Number of cases where paraffin lodged in undesirable location at the time of operation.

(8) Number of cases where paraffin shifted after operation.

(9) Instrument used for injection.

(10) Kind of paraffin used and melting point.

(11) Methods employed to prevent paraffin entering undesirable localities.

(12) Conclusions: Do you consider it dangerous, undesirable, unwarrantable, or practical?

Ninety-one replies were received to these letters. Of this number forty-one surgeons had made paraffin injections for the correction of nasal deformities in one or more cases; forty had had no experience, and the remaining ten too little experience to warrant the expression of an opinion. The author himself, whose statistics were not included in the above, in over 200 injections of paraffin for the correction of nasal deformities had had only two unsatisfactory results. These were cited in detail.

The selection of the proper substance for injection was of the utmost importance, whether it be purely paraffin or a mixture of paraffin with other substances. The desirable substance was one with a melting point sufficiently high to reduce to a minimum globular formation when injected, and yet not sufficiently hard to produce inflammatory conditions by constant irritation of the subcutaneous tissues. The permanence of the paraffin in the tissues depended upon the melting point of the paraffin and the state at the time of injection. The colder the paraffin at the time of injection, the more lasting it would be in the tissues, and likewise the better the anchorage insured. For a number of years he had used a paraffin with a melting point of  $110^{\circ}$  F.

The total number of cases reported by the forty-one observers above referred to was 1252. Of these 1000 were entirely successful; 104 were unsatisfactory. Two of the 104 cases resulted in blindness; 55 in sepsis and extrusion of the paraffin; in 22 the paraffin lodged in the wrong location; in 7 it shifted after operation.

The instruments used were ordinary hypodermic syringes, Killian's, Beck's, Pfau's, Broeckhart's and Smith's. The paraffin injected varied in melting point from  $103^{\circ}$  F. to  $136^{\circ}$  F., the majority using paraffin melting at  $110^{\circ}$  F. Thirty-one of the operators considered the procedure practical if proper precautions are observed, and if performed by an experienced operator. The other ten considered it dangerous, and in most cases unwarrantable.

The author concluded that the operation is not without its dangers, which, however, can be avoided. It was a practical procedure when performed by one of experience and with thorough surgical precaution. The proper paraffin was one with a melting point of  $115^{\circ}$  F., and made of hard and soft paraffin. The mixture must be injected cold, and the needle must be directed from above downward. The upper part of the nose should be protected by digital pressure, and the injection should be made slowly, and only in small quantities at each sitting. Ample time must be allowed between injections in order that the tissues may regain their normal vitality. No syphilitic, diabetic, or nephritic patient should be injected without due consideration, and no attempt should be made to inject cold paraffin except with a screw syringe, or with one of the ratchet injectors.

*The Operative Treatment of Hare-Lip and Cleft Palate.*

Dr. JOHN F. BARNHILL, of Indianapolis, Ind., advocated in this paper the inclusion of the repair of hare-lip and cleft palate in the practice of rhinology and laryngology. No one was presumed to have a better knowledge of all the structures involved than the laryngologist and rhinologist, and no one should be better able than he who is trained to work in the deep cavities to carry out the delicate technique necessary to success. Most surgeons now agreed with Lane, Brophy, and Ferguson that the best time to operate for the correction of these abnormalities is soon after the birth of the child. Good cosmetic effects might be obtained at a later period, and operation should not be refused at any age, though but little improvement of speech might be expected. The operations for hare-lip and cleft palate were considered separately.

The plan of operation in any case of hare-lip must depend upon the nature of the defect, each case having to be considered on its own merits. When only a notch is present, Nelaton's method of procedure could be successfully followed. When a single fissure extends up to or into the nostril, either a unilateral or bilateral tongue-shaped flap could be cut from each lip, the plan to be followed depending upon the amount of tissue missing. The principle should always be followed of utilising all the tissues that remain, in order that there may be as little tension as possible on the retention sutures. In this respect Ferguson's plan of turning back flaps of mucons membrane from the upper three fourths of the cleft was most excellent. In cases of double hare-lip with an intermaxillary projection, standing at right angles to the normal alveolus and adherent to the tip of the nose, it was necessary to deal with such projection by a preliminary operation for the replacement of the projection in a position corresponding with the normal alveolar arch. The author did not advocate the removal of this intermaxillary portion. In case the deficiency extends into one or both nostrils, with distortion and detachment from the septum of the cartilaginous wings, the plastic repair must include the careful restoration of the same. Failures resulting from repair of hare-lip were due: (1) to malnutrition of the patient; (2) to improperly prepared or badly adjusted flaps, and (3) to too great tension on sutures.

In operating for the closure of cleft palate the author agreed with Brophy that the best age is within three months from birth. The technique of the operation depended largely upon the age of the patient at the time the closure is undertaken, and the plan of



procedure advocated by Brophy was best. The results of this method had demonstrated to his perfect satisfaction that Brophy's contention is correct when he holds that the cleft in the palate is not due to an arrest in development, with consequent deficiency of tissue, but that the fissure occurs as the result of the failure of the two sides to unite, even though sufficient material be present. Brophy's method of bringing the two sides together was then described.

In operating on infants having both hare-lip and cleft palate, the palate should be repaired first.

After the individual has passed the age when it is possible to bring the two sides together by Brophy's method, the Davies-Colley operation was perhaps the most satisfactory.

The chief benefits to be noted from successful operations for the correction of hare-lip and cleft palate were: (1) marked change of feature, and (2) improvement in voice and speech, the former being immediate and the latter becoming apparent as the child acquires a knowledge of spoken words. Early operation and a method of procedure which does not interfere with muscular action were always to be advocated.

### *The Cosmetic and Plastic Surgery of the Ear.*

Dr. MAX A. GOLDSTEIN, of St. Louis, presented this communication. He classified his discussion of the cosmetic and plastic surgery of the ear as follows: (1) The correction of defects and deformities of the external ear, including the many abnormalities and congenital stigmata; (2) a discussion of the plastic technique following radical mastoid operation, with special reference to the operative details in the formation of the various flaps, and a comparison of the special advantages of each of these plasties; (3) the correction and closure of persistent retro-auricular openings following the radical operation, and a consideration of the various methods for accomplishing the same.

After a brief review of the embryology of the auricle, the author gave the most conspicuous anomalies of the auricle, according to the classification of Gradenigo, as follows: (1) Macrotia and asymmetry of the auricle; (2) heterotopy; (3) adhesion of the posterior surface of the auricle, in whole or in part, to the head; (4) projecting auricle (prominent ear); (5) pointed ear (the Darwin tubercle and the Satyr point); (6) the Macacus ear (also known as Darwin ear); (7) Wildermuth ear (prominence of anti-helix); (8) absence of the helix; (9) absence or exaggerated development

of the lobule; (10) adhesion of the lobule (synechia). The author then detailed the various surgical procedures for the correction of these deformities.

The plastic surgery of the ear as applied to the mastoid operation and to the conduct of retro-auricular wounds was detailed according to the methods of Mosetig-Moorhoff, Trautmann and Goldstein. The author believed this to be a classic field, and held that future attainments in this important department of aural surgery will depend largely upon the perfection of the plastic work associated with the mastoid operation.

#### DISCUSSION.

Dr. WILLIAM L. BALLENGER, of Chicago, confined his remarks to two points of technique which he had employed with satisfaction. First referring to the "hook nose," mentioned by Dr. Beck, he had recently had a patient with combined humped and hooked nose. The humped portion he removed by the subcutaneous method, perhaps the exact method employed by Dr. Roe, though he had not seen the latter's operation. After freely elevating periosteum and skin he introduced the reverse chisel and shaved off the lump. He then corrected the hook by dissecting out a V-shaped portion of the cartilaginous part of the septum, taking out the entire thickness of the septum, leaving only the skin. Having done this he applied adhesive strips to the nose. The nose, instead of hanging downward, had the proper amount of extension, and the patient was very well satisfied with the result. The operation was done entirely by the subcutaneous or intra-nasal method, which was not difficult of performance. Referring to the injection of paraffin, he had had one case in which the paraffin became dislodged after operation. He did not know how soon after the operation the displacement occurred, as he did not see the patient for a year following the operation. He did not remember the melting point of the paraffin. He injected the paraffin from below upward, which is contrary to the advice given by Dr. Smith. He had always done this, which, perhaps, accounted for his dissatisfaction with this method. He was indebted to Dr. Smith for his explanation of this point in technique.

Dr. ARTHUR B. DUEL, of New York City, called attention to the fact that unsightly deformities sometimes follow plastic surgery of the ear by cutting across the crista helix, instead of parallel with it, in the effort to get more skin. He had, for a number of years,

been deeply interested in the subject of the plastic surgery of the ear and believed that it should much more frequently be attempted by the aurist. In the majority of instances the aurist hesitated to undertake these operations because of the danger of chondritis following interference with cartilage, and the further danger of this causing greater deformity than that which he was endeavouring to correct. By referring to the pictures presented it would be seen that the protruding ear was the result, not so much of enlargement of the cartilage, but of a rolling out of the anti-helix.

It was possible in every instance to correct the most markedly protruding without interference with the cartilage, thus producing a better ear than would follow the removal of a wedge of cartilage. In no instance, in his experience, had the resilience of the cartilage been sufficient to pull the ear back.

Photographs were exhibited showing most markedly protruding ears which had been entirely corrected without any interference of the cartilage. The difficulty with the first cases had been that the amount of skin necessarily removed to bring the ear back into correct position had necessitated a cut so near the helix that the resulting post-auricular sulcus had been very shallow. He had, therefore, sought some method which would correct the deformity without interference with the cartilage, and still preserve the original depth of the post-auricular sulcus. He had accomplished this in the following manner:

The scalp was shaved as for a mastoid operation and the operative field rendered aseptic. The skin on the back of the ear was grasped with two pair of mouse-tooth forceps in different positions and carried back to the scalp until the most advantageous points were determined. These were then marked by a tight squeeze of the forceps both on the ear and scalp, thus fixing the limits and direction of the subsequent incisions. Two incisions an inch long through the skin and deep fascia of the scalp were then made, one along the post-auricular angle, another parallel to this and one half inch posterior to it. This band of skin was then dissected up, thus forming a thick loop.

Parallel incisions through the skin, at a width corresponding to the marks made by the mouse-tooth forceps on the back of the ear, were then made at right angles from the anterior border of the loop up to the points marked near the helix (the points at which the pull should come to overcome the resilience of the cartilage of the protruding auricle.) The band of skin between these incisions was dissected up, great care being exercised that the

perichondrium was not injured. Two pair of mouse-tooth forceps were then slipped under the loop, and the end of the band of skin being grasped at each corner it was pulled back under the loop, which acted as a fulcrum, until the ear was brought back into a correct position. With this held in place, the position on the scalp which the band then occupied behind the posterior border of the loop was outlined by the point of a scalpel. In the same way, the area of skin on the band which laid under the loop was outlined. The band was then temporarily removed and the quadrilateral area of scalp posterior to the loop was dissected out. The area on the band of skin which was to lie under the loop was superficially denuded (this was best done by stretching it over a roll of gauze held in the left hand while the cutis was removed by a sharp scalpel in the right; scarification was not sufficient).

The band was then drawn under the loop again and held in place by suturing its end in the quadrilateral space made in the scalp behind the loop, thus holding the ear in correct position. All lines of incision were then sutured together on the posterior aspect of the ear and on the scalp on the anterior and posterior borders of the loop. The lines at which the band passes under the loop were sutured superficially.

A few layers of gauze were laid between the ear and the scalp, a generous dressing applied, and the ear held back by pressure. Stitches were removed in eight days. Pressure dressings should be applied for at least two weeks.

Photographs showing complete correction by this method of marked deformities, still leaving the post-auricular sulcus of a normal depth, were exhibited.

Dr. FRANK ALLPORT, of Chicago, said that the operation proposed by Dr. Duel was similar in its principle to his modification of the Panas operation for ptosis of the upper lid. Panas, of Paris, years ago proposed the making of a bridge flap in the eyebrow and a tongue flap in the lid and drawing the tongue flap up underneath the bridge flap and attaching it to the upper border of the highest incision. This, of course, shortened the lid. It had one defect, however, as it was impossible to produce a growing together of the skin surface of the tongue flap and the raw surface underneath the bridge flap. This always left a pocket or *cul-de-sac*, which was not only disfiguring, but which collected *débris* of various kinds and had to be cleaned out from time to time with alcohol, etc. Dr. Allport modified this operation some years ago by abraiding, incising and scraping the skin surface of the tongue

flap so that when the two were finally brought together a solid adhesion occurred which obviated the effect of the Panas operation.

With reference to the flap used after the radical mastoid operation, Dr. Allport preferred a modification of the Panas flap. In performing this portion of the operation he thrusts a sharp-pointed, double-edged knife from behind forward directly through the cartilage of the auricle, at a point corresponding as nearly as possible to the middle of the meatus. The knife appears a little back of the meato-conchal rim in order to enlarge the meatal orifice. This sharp knife is then withdrawn and another blunt-pointed knife made to take its place, as the see-saw movement necessary to finish the incision up and down would be likely to produce multiple punctures in the other side of the meatus, provided the use of the pointed lance-shaped knife was continued. The incision should correspond as closely as possible to the curve of the meatus and should extend up and down as far as possible. By making this portion of the flap operation at this time it is possible to control its size and shape better than if it were done after the longitudinal incision is made in the posterior tissue of the cartilaginous meatus. After this incision has been completed, the spreader, or divulsor, is thrust into the cartilaginous meatus and the blades opened as wide as possible, in order to put the meatus on a tension. The lower blade of the divulsor can be used as a director and a blunt knife can now be introduced into the distal end until it reaches the incision previously made. Panas' original flap was made in the centre of the canal, which made an upper and lower triangular flap practically of equal dimensions. Dr. Allport has found, however, that there never seems to be any trouble in healing over the floor of the bony cavity, and therefore believes that it is best to give all the tissue possible to the upper flap in order that the roof may be speedily healed over. He makes a longitudinal incision as far down as possible so as to give all the tissue possible to the upper flap. The angle of the upper flap is sutured to the soft tissues underlying the skin with catgut and the cavity is then packed. He has found this modification of the Panas flap very satisfactory, and finds that he is very seldom required to use skin-grafts.

*(To be continued.)*

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## EIGHTH INTERNATIONAL OTOLOGICAL CONGRESS, BUDA-PEST, 1909.

### LENVAL PRIZE.

BARON DE LENVAL, on the occasion of the Third International Otolological Congress, founded a prize of 3000 francs to be awarded to such person as should invent and produce a small portable instrument very materially assisting the hearing of the deaf.

As no such instrument has yet been forthcoming to the satisfaction of the International Jury appointed to adjudicate upon the matter, the accumulated interest of four years, amounting to about 400 francs, will be awarded as a prize for the best work that has been published during the last four years in the departments of Anatomy, Physiology or Pathology of the Organ of Hearing.

Competing works should be sent to the President of the Jury, Prof. Dr. A. Politzer, I Gonzagagasse 19, Vienna, before the end of February, 1909.

The publication of the verdict of the Jury, and the presentation of the prize to the successful competitor, will take place at the Eighth International Congress, to be held at Buda-pest in August of this year.

The following gentlemen constitute the International Jury: Prof. Adam Politzer (President), Dr. Benni (Warsaw), Dr. Gellé (Paris), Prof. Urban Pritchard (London), Prof. Kirchner (Würzburg), Prof. Grazzi (Florence), Prof. Moure (Bordeaux), and Prof. Böke (Buda-pest).

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## Abstracts.

### PHARYNX.

**Hahn** (Turin).—*A New Method for the Treatment of Acute Follicular Tonsillitis.* "Bollettino delle Malattie dell'Orecchio, etc.," No. 11, 1908.

The author defines the disease as an infective process, not specific, which often remains localised into the tonsils, but can easily overstep the barrier of this organ, and with the extension of infective and toxic products to other organs, produce localised disease in these organs, or general infection also.

He proves this assertion by numerous clinical facts collected from the publications of several authors.

In the presence of an infection that may cause, under favourable anatomical conditions, many and serious complications, it is reasonable to

have recourse to a remedy more active than those usually indicated in treatises.

After mentioning what other laryngologists have proposed, the author proposes to wash the tonsillar crypts with a special syringe containing luke-warm oxygenated water (12 vol.) with a solution of boric acid (3 per cent.) This liquid is carefully injected into every *crypta*, and especially several times into the *recessus* of the palate and in the cavity situated behind the fold of His.

After having done this preparatory washing we must inject many times with the same method into the tonsillar crypts and the surrounding cavities, a lukewarm solution of novocaine of 2 or 3 per cent. in hydrochloride of adrenalin at 1 per cent., and then practise on the tonsil an insufflation of an anæsthetic powder.

The patient obtains an immediate improvement. Sometimes if the treatment is begun at the commencement of the illness the tonsillitis aborts. By freeing the crypts from their contents we are in the best condition to abridge the illness and to avoid the serious complications which may follow a follicular tonsillitis.

V. Grazzi.

**Januskiewicz, A. M.** (Kiew).—*Pharyngitis Keratosa Punctata*. "Virchow's Arch.," Bd. 193, Heft 1. Review by BABINSKY in "Arch. f. Kind.," Bd. 49, Heft 1 and 2.

In connection with a case of chronic benign mycosis of the tonsil, from which a piece was removed, it is shown that the cause of this affection is not so much the *leptothrix* found in these cases as a rod-shaped bacillus described as *B. keratosa*, and somewhat resembling the diphtheria bacillus; it is, however, thinner, and has a tendency to become curved. The bacillus was discovered and described by Wyssokowicz.

Alex. R. Tweedie.

**Jovane, Antonio.**—*Spasm of the Isthmus Faucium in Children*. "La Pediatria," February, 1907. Review by NETER (Mannheim) in "Arch. f. Kind.," Bd. 49, Heft. 1 and 2.

Three cases of dysphagia in children are described, and all only in respect of solids. All three children were deficient in intellect. One of the cases is reported:

A boy, aged one and a half years; parents blood relations; one brother with the same difficulty in swallowing; breast fed. Solid food was first returned at one year old, when the mother noticed he began to keep it a long time in his mouth, to chew it, and then spit it out. If he was compelled to swallow it, choking and eventually vomiting ensued. This story was corroborated in the clinic. Fluids were easily swallowed. At the age of three the dysphagia gradually disappeared. The child was well nourished but markedly rachitic; the palate is described as hyperæsthetic. He was an imbecile.

Alex. R. Tweedie.

## NOSE.

**Lindt, Prof.** (Berne)—*A Rare Case of Tuberculosis of the Nose*. "Archives Internationales de Laryngologie, d'Otologie, et de Rhinologie," September-October, 1908.

The author describes a case of a young man suffering from an inodorous, muco-purulent discharge of the right nostril. On examination a soft granulating swelling was discovered involving the posterior third of the inferior turbinate, which easily bled when touched by the probe.

Posterior rhinoscopy showed a granulation about the size of a pea, surrounded by muco-pus. There was a history of syphilis.

On removal the microscopic examination showed granulation tissue with some giant cells. Potassium iodide was given, but had to be stopped on account of catarrhal symptoms set up in the apex of the right lung.

He gave a positive reaction to injections of tuberculin.

The mucous discharge which persisted was cured in three months by sprays of menthol.

Anthony McCall.

**Kuhn, Philipp.**—*Primäre Nasendiphtherie mit Membranbildung (Rhinitis fibrinosa sive pseudo-membranacea diphtherica) im ersten Lebensmonat* [Primary Nasal Diphtheria with Membrane Formation in the First Month of Life]. "A. F. K.," Bd. 47, bis. 1, Heft. 3.

This article chiefly concerns the case of a little boy who from birth up to the second week of his life progressed normally with the exception of a slight and quite transient attack of conjunctivitis. During this period he seemed inclined to sneeze, but his general condition remained good and he took and slept well. He was breast-fed for the first week, but subsequently brought up on the bottle as the mother then developed some puerperal fever. For this reason it was considered best to send the child away to some friends on the eleventh day.

On the nineteenth day he was brought back as he had a "cold" and was obviously "ill." His nasal respiration was impaired though there was scarcely any mucous discharge, apart from which he had no definite symptoms. On the twentieth day great distress and dyspnoea supervened; the temperature, however, remained normal and an examination of the still scanty discharge only revealed the presence of "mouth bacteria," no Klebs-Loeffler bacilli being detected. The mucous membrane was considerably swollen, but was quite unresponsive to various forms of local treatment adopted. The dyspnoea became worse and dysphagia also occurred; so urgent, indeed, did his condition seem that tracheotomy was advised but declined by the father.

After remaining in this state for another two days spontaneous improvement took place, and as then on the fourth day of the disease Klebs-Loeffler bacilli were discovered in a "swab" from the nose, anti-toxin was injected and the child and his attendant isolated. There were, however, now no clinical manifestations of diphtheria, that is to say, "no blood-stained or muco-purulent discharge from the nose, excoriation of the vestibule or enlarged glands, nor were there any throat symptoms."

On the fifth day of the disease a blood-stained discharge appeared, and on the sixth, seventh and eighth this continued and some membrane came away from the nose. After this the child made a rapid and complete recovery.

Dr. Kuhn discusses the ætiology at some length, and is on the whole inclined to consider the boy's illness attributable to the same cause which determined the mother's feverish condition, which he suggests may very possibly have been of a diphtheritic nature, since this factor in the production of puerperal fever may be overlooked. She certainly had had an ulcer on the left labium, which was, however, in no way characteristic of diphtheria. The mother recovered in fourteen days, the only events in her convalescence being two attacks of joint swellings, accompanied by a rash which Kuhn thinks may have been due to the serum used in her treatment.

Generally, Kuhn attaches great importance to a bacteriological examination in all such cases, and emphasises the point that one examina-



tion should not be regarded as sufficient since in this case, at least, the first examination was "negative," though the Klebs-Loeffler bacillus was later found without any doubt whatever.

He regards these cases as true diphtheria if this bacillus is found to be present by an experienced bacteriologist, and thinks antitoxin should then be injected even if there are no corresponding clinical symptoms. He has only been able to find two other cases reported of this disease occurring so early in life, otherwise his case does not appear to differ materially from other instances of this disease nor his views and observations from those most generally held.

*Alex. R. Tweedie.*

**Salzwedel.**—*The Treatment of Colds and Chronic Nasal and Pharyngeal Catarrh.* Review in the "Corresp.-Blatt für Schweizer Aerzte," November 15, 1908. Quoted from "Therap. d. Gegenw.," February, 1908; "Centralbl. f. d. Ges. Therap.," Heft 9.

Salzwedel has seen good results ensue by the use of a 0.5 per cent. solution of silver nitrate. He has cured many cases of catarrh which had been of frequent recurrence for some years, and especially such forms as follow attacks of influenza. With the subsidence of the pharyngeal catarrh he also saw other manifestations disappear, which at first sight did not seem to have any causal relation to this condition. Thus, for instance, he noticed recovery from anæmia in children and young girls after such a course of treatment, and even bronchitis and attacks of coughing, the nature of which was attested by cultural experiments, ceased after the application of this solution to the nose.

The treatment is carried out by "pencilling" the interior of both anterior nares as far back as the anterior end of the inferior turbinal (not further), and the whole posterior wall of the pharynx accessible, whilst the patient holds the mouth open and says "ah." The anterior wall of the vestibule is also "pencilled" in the same way. The patient is instructed to incline his head backwards whilst the lotion is squeezed into the nares from a swab, so that the drops run towards the post-nasal space. At first the "pencilling" is limited and only performed lightly; later on energetic swabbing of the recesses of the pharynx is undertaken. In acute cases it is done once daily, rarely twice a day, afterwards treatment every three or four days suffices. Since at the commencement of treatment an increased secretion may take place, it is recommended then only to make this application in the evening about two or three hours before bedtime.

*Alex. R. Tweedie.*

## LARYNX.

**Koch, Dr. Adolf.**—*Annual Report of the Schöenberg Sanatorium for 1907.* "Medic. Corresp.-Blatt. des Württemberg. ärztlich. Landesvereins," December, 1908.

In the conclusion of this report is an account of the congestive treatment and treatment by direct sunlight of tubercular disease of the larynx and their results.

By the first-mentioned method patients who had suffered from difficulty in swallowing reported considerable relief almost directly the bandage was put on, this being especially noticeable in cases of affections of the posterior wall of the larynx. A simple black rubber bandage was used about 1½ inches broad, which was adjusted round the neck below the

pomum Adami in front and carried as low as possible behind. The skin was previously well powdered. It was drawn sufficiently tight so as to be distinctly felt, but not so as to produce any symptoms of giddiness or headache, and was fastened with three hooks and eyes. The initial feeling of constraint soon passed off. On the first day the bandage was put on twice for about one to one and a half hours at a time, and afterwards four times a day for a period of one and a half hours, whilst it was always worn at meal times. It is not said for how many days this treatment was continued.

The treatment by direct sunlight was carried out as follows: An outline of the general anatomical construction of the pharynx and larynx was first given to the patients themselves, or the laryngeal image itself in another patient was shown them, after which they were instructed in the use of the laryngeal mirror, the technique of which was learnt by most of them in a short time, and eventually they were able to see their own larynx without much difficulty. A fairly large reflecting mirror was used with a view to make the procedure as easy as possible, and in addition its upper half was covered with some black material so as to obviate the reflection of the rays into the eyes.

Usually two applications of half an hour each were given, but on hot summer days the treatment was restricted to two or three applications of ten minutes' duration; the rays were not cooled. It was interesting that two patients who had always had a normal temperature, immediately after the treatment on a hot summer day showed a temperature in the mouth of 39.6 C. Within half an hour this fell to their usual temperature of below 37° C. Patients whose temperature was already raised were not submitted to this treatment as it entailed too much exertion. Since October, 1907, up till the issue of the report, twenty-one patients have been treated in this way; three were at the time of writing still under treatment; eight, for purposes of this account the author omits as they had not been long enough under treatment; whilst of the remaining ten a cure was attained in six cases, two were considerably improved, and in two some improvement had taken place.

The lesions which had been observed in the cases reported as "cured" included ulceration of the posterior wall, injection and swelling of the ary-epiglottic folds, the ventricular bands and arytaenoid region, and infiltration of the posterior wall. In one case there was an ulceration of the right ventricular band, and in one a similar condition on the left vocal cord. The two cases which had considerably improved had an ulceration of the posterior wall, whilst in the two in whom some improvement had taken place there was an infiltration of the posterior wall in one, and an ulcer in the same situation in the other.

The duration of the treatment was from three hours on four days up to sixty hours on seventy-five days.

Although he does not mean to suggest that the other methods of treatment should be given up, the author considers the results are sufficiently encouraging to continue the practice of this form.

He thinks that his experiences justify him in making the following conclusions: That treatment by direct sunlight of tuberculosis of the larynx is suitable for cases of inflammatory conditions which are associated with tubercular foci, for superficial infiltrations and tumours and for surface ulcerations. It is also of use as a method of after-treatment in cases previously subjected to surgical interference.

*Alex. R. Tweedie.*

**Réthy, L.**—*Laryngeal Complications in Multiple Sclerosis of the Brain and Spinal Cord.* (Review by Siebenmann.) "Correspond. Blatt für Schweizer Aerzte," October 15, 1908.

This account is based on the laryngoscopic examination of thirty-eight such cases, two of which were afterwards subjected to an autopsy. Réthy arranges these complications into four groups:

(1) Symptoms apparent to the ear of the observer (scanning speech, lack of inflection, delayed production and incapability of maintaining a note, hoarseness, nasal speech, noisy inspiration).

(2) Paralyzes of the larynx.

(3) Tremors, jerky breathing, spasmodic action of the intrinsic and extrinsic muscles of the larynx.

(4) Impaired sensibility.

The third group is compared to similar appearances occurring in connection with hysteria, chorea, paralysis agitans, and tabes.

*Alex. Tweedie.*

**Smoler, F.**—*A Rare Case of Injury to the Throat.* "Prager med. Woch.," 1908, Nr. 27.

A boy, aged five years, fell down some stone steps with a glass bottle in his hand, and sustained a wound of the left side of his throat, on April 4, 1908. The wound was about 1 cm. long, and situated beneath the thyroid cartilage on the left side between the trachea and the anterior border of the sterno-mastoid. There was no emphysema and no dyspnoea, so the wound was merely dressed and the patient put to bed.

The next morning, on drinking milk, some drops were observed to come out of the wound, so an injury to the walls of the œsophagus was diagnosed, and the boy taken to the theatre. The wound was examined and found to lead down to the œsophagus between the sterno-mastoid and vessels on the one side and the trachea on the other. The mucous membrane of the œsophagus was slightly prolapsed through the wound, and in addition a small slit in the trachea was discovered between two of the rings about  $\frac{1}{2}$  cm. long. As this latter opening was considered prejudicial to healing, and as it was thought dangerous to entirely close the œsophageal wound, a regular tracheotomy was performed in the middle line, the edges of the accident wound merely brought together by a couple of sutures, and a small drainage-tube inserted, its outer end being stitched to the skin, through which the child was fed. With the exception of some bronchitis, which lasted a week, the recovery was uneventful. On April 16 the tracheotomy tube was finally removed, and in a few days the wound was healed. No complications ensued.

*Alex. R. Tweedie.*

**Møller, J.** (Copenhagen).—*Amputation of the Epiglottis in Laryngeal Tuberculosis.* "Zeitsch. f. Laryngol.," vol. i, Part I.

The writer reports ten cases in which this measure was employed. In four of them the laryngeal disease remained completely healed after two years, nine months, four months, and two months respectively. In one of these the disease before the operation not only involved the epiglottis, but was very extensive in other parts of the larynx. After removal of the epiglottis healing was rapid and uninterrupted. One case was still under treatment, the amputation wound being healed but there being other laryngeal disease, which was, however, making good progress. In one case there remained fairly extensive laryngeal tuberculosis, but dysphagia, previously very troublesome, was still absent a year after the operation.

Two patients had died. In another case there was no return of the dysphagia, but the patient died later of cerebral tuberculosis. In two cases the subsequent events were not known, but in one of them when last seen healing was almost complete.

The operation is not a very painful one, although when there is much infiltration the effect of the cocaine is only partial. Alexander's guillotine is an ideal instrument for the purpose.

The writer regards the operation as a very valuable one, and gives the following indications for it:

(1) Tuberculous disease completely or almost completely limited to the epiglottis, when the general condition is good enough to allow of this comparatively slight operation.

(2) Marked dysphagia, without reference to the condition of the larynx and lungs if the dysphagia is probably caused by the epiglottic disease.

(3) Advanced tuberculosis of the epiglottis in cases of more extensive laryngeal tuberculosis, even when there is no dysphagia, provided that lung disease is absent, or so slight that healing or considerable improvement may be expected.

Thomas Guthrie.

## EAR.

**Moy, M.**—*Otitis in Varicella*. "Thèses de Lyon," 1906-7, No. 53.

In 875 cases of varicella Semtschenko noted otitis in 17. This complication, which is most likely to occur in children with large tonsils and adenoids, is due to the bucco-pharyngeal inflammation spreading to the middle ear *via* the Eustachian tube as in other infectious diseases. The aural manifestations of varicella are: (1) Acute otitis media, due primarily to varicella; grave complications may arise, *e.g.* mastoiditis, meningitis, cerebral and cerebellar abscess, and thrombosis of the lateral sinus; (2) recrudescence of old otitis; (3) otitis externa, usually benign, but sometimes followed by mastoiditis and even meningo-encephalitis. Prophylaxis should consist in careful daily ear and throat examination, and in a rigorous bucco-pharyngeal antiseptics.

Macleod Yearsley.

**Ferreri, Prof.** (Rome).—*Labyrinthine Vertigo Caused by Irritation of the Vagus*. "Atti della Clinica oto-rino-laryngoiatrica, del Prof. Ferreri di Roma," Anno v, 1907.

He relates ten histories with many sphygmograms, by which he shows that in persons who suffer from cerebral vertigo the pulse becomes manifestly slow on compression of the *vagus* at the right part (cardarelli). In the others, which were classical aural cases, the line of the pulse in the same conditions of examination did not present any alteration.

V. Grazi.

**De Carli.**—*A Case of Aural Diphtheria*. "Atti della Clinica oto-rino-laryngoiatrica, del Prof. Ferreri di Roma," Anno v, 1907.

This is the case of a person, about thirty years of age, in whom the *otitis media* was the only manifestation of the diphtheria.

The bacteriological examination gave an almost pure culture of the bacillus. Recovery with Behring's serum (9000 units). The otitic process, which had begun violently, ended in nine days.

V. Grazi.

## MISCELLANEOUS.

**Maas.**—*Rumination in a Nursing Child.* "Med. Klinik," November 31, 1907. Review by MAY (Worms), in "Arch. f. Kind.," Bd. 49, Heft 1 and 2.

This relates to the case of a child, aged eight months, who lay with the head bent backwards and made chewing movements when the mouth was empty. This action was followed by a flow of the contents of the stomach into the mouth, which were apparently chewed again with great relish. The procedure was carried out with such skill that not a drop was lost. It occurred both directly after taking food as well as some two to three hours later. At the latter time it was usually induced by some external influence (loud speaking, slamming of a door, presence of a stranger). Directly after food light palpation of the stomach would bring it on. Chemical examination of the ruminated food showed milk to be present, but no free hydrochloric acid. A diverticulum was quite excluded. Treatment consisted in avoidance of every possible source of exciting cause and in regulation of diet. *Alex. R. Tweedie.*

## REVIEWS.

*A Manual of Infectious Diseases.* By E. W. GOODALL and J. W. WASHBOURN. (Second Edition revised by E. W. GOODALL.) London: H. K. Lewis, 1908.

The laryngologist whose view is not too restricted cannot fail to appreciate the work of a writer on infectious diseases who also is free from narrowness of view. The second edition of the "Manual of Infectious Diseases," originally written by Dr. E. W. Goodall and the late Dr. J. W. Washbourn, will no doubt be greatly appreciated by our readers; the work has been revised by the survivor, Dr. Goodall, in the light of the progress which has been made in bacteriology and clinical pathology in general since the year 1896, when the first edition was produced. The chapters which are of most interest to us are those dealing with the infectious diseases in which affections of the throat and ear occur as complications, or in which the question of diagnosis is involved, and therefore Chapter V, concerning the affections of the throat which are not infrequently mistaken for scarlet fever or diphtheria, will be found extremely useful. The varieties of acute sore throat are described in a way which appeals to the general practitioner as well as to the specialist, and among the additions in the present volume is the paragraph on acute septic inflammation of the fauces, in which the writer expresses his agreement with the familiar views of Sir Felix Semon. The methods of staining organisms obtained from the throat are clearly described. Traumatic or surgical scarlet fever is, of course, a burning question, and the writer states that there is no evidence that scarlet fever occurring in the subjects of operations or other wounds differs in any respect from ordinary scarlet fever, nor, he continues, does it appear that such patients are more liable to contract the disease than other patients. Some valuable statistics collected by Bellingham Smith are quoted as showing that, at all events, in regard to burns and scalds, patients suffering from burns are specially liable to be attacked with scarlet fever, and there seems a probability that scarlatiform rashes in those suffering from burns are really scarlet fever. The bacteriology and history of the toxins derived from the diph-

theria bacillus have been expanded and almost re-written. The relationship of Hoffmann's bacillus to the true diphtheria bacillus is one of association and not identity, and in the experience of the writers no cases have occurred in which, Hoffmann's bacillus alone being present, diphtheria was conveyed to other patients. With regard to the simultaneous presence of streptococcus and the opinion that the most severe cases of diphtheria are those in which many streptococci develop in cultivations, the authors are very definite in their opposition to this latter view, as they have found that the most severe cases of diphtheria are those in which almost pure cultivations of the diphtheria bacillus are found in the culture tubes, the dangers caused by the streptococcus being chiefly those of the secondary complications. The comparison between the views as to intubation expressed in the original and present editions is interesting. Thus in the former the conclusion arrived at is that "the latter operation (tracheotomy) is therefore preferable to the former (intubation)," while in the latter it is that "intubation in hospital practice should certainly be tried first. If it fails to relieve the obstruction tracheotomy can be performed and the patient is no worse off" (p. 139). The directions for intubation recommended are those given by the reviser in the "Index of Treatment" (Hutchison and Collier), and will be found extremely clear. Great stress is laid on the tendency for the larynx to become inflamed in measles, and in point of fact an attack of measles may begin with "croup," combined, however, with pyrexia, coryza, and Koplik's spots (p. 129). It is regrettable that in the lavish wealth of illustration these spots do not find a place. It seems to us that the account of the theory of immunity given in a few pages (23-31) is the clearest we have read, and for those who find themselves in doubt as to the meanings of such terms as "amboceptor," "complement," "thermostabile," and "thermolabile" substances in serum will find their views clarified without difficulty by a perusal of this section. The book concludes with a valuable appendix giving formulæ for stains, regulations with regard to removal of patients suffering from infectious diseases, a table of incubation periods, etc., the utility of which is self-evident.

Dundas Grant.

*Tracheo-Bronchoscopy, Œsophagoscopy, and Gastroscopy.* By CHEVALIER JACKSON, M.D., with five coloured plates and many illustrations. St. Louis, Mo.: The Laryngoscopic Company, 1907.

Dr. Chevalier Jackson's work is full of personal experience of the difficulties as well as of the triumphs associated with the practice of the direct endoscopy of the air- and food-passages, and is therefore of inestimable value to the learner. The history of the subject receives full notice and the development of the armamentarium is most copiously illustrated. The technique is minutely described and the description is greatly facilitated by the numerous schematic, anatomical and other drawings. Dr. Jackson is an ardent advocate of illumination by a lamp conveyed to the inner extremity of the tube as making the inspection easier in every case, and as being indispensable when very long tubes, such as those for gastroscopy, are used. He enumerates the various circumstances under which, over and above the detection and extraction of foreign bodies, direct endoscopy is indicated, and the reader will find these much more numerous than he would at first suppose. One of the most attractive features of the work is the beautiful atlas of tracheoscopic, bronchoscopic, œsophagoscopic, and gastroscopic views. There is a copious bibliography and an appendix, in which is described the endoscope with external illumination devised by von Brünig.

This advance in our specialty is one which no laryngeal surgeon can afford to disregard, however satisfied he may be with his powers in the practice of what Dr. Chevalier Jackson is pleased to call the "old indirect method." Among other convincing illustrations brought forward by the writer we may cite one of thymic asthma (p. 70) revealed by the endoscope and successfully treated by removal of the enlarged thymus, also cases of nervous cough (p. 68), and "globus hystericus" (p. 110), only traced to their real cause by these methods. Our readers will undoubtedly endorse our cordial recommendation of this work.

*Infected Ears [Intra-meatal Treatment].* By F. FAULDER WHITE, F.R.C.S. London: The Celtic Press, 1908.

A careful perusal of Mr. Faulder White's monograph upon the subject of infected ears reminds one of the story of the juryman who could not be induced to agree with his colleagues, and who is reported to have said that he had never upon any previous occasion met with eleven such obstinate men.

Mr. Faulder White's advocacy of intra-meatal treatment loses much of its value from a neglect of accurate pathological work and from loose clinical observation. The coining of the term "otectomy," which he describes as a cutting out from the ear, is an unfortunate and inexplicit expression, conveying, as it does, no exact meaning of what is actually to be done or what is done.

Every aural surgeon has in the sense in which Mr. Faulder White uses the term "otectomy" done otectomies from the very commencement of his work. There is surely nothing new in the advocacy of the removal of polypi, bone granulations, diseased ossicles, etc.

Where Mr. White does work in a "lonely furrow" is in his ruthless scraping out of the tympanic contents through the meatus, a method condemned by all modern otologists and contrary to the elementary canons of surgery.

In the performance of an otectomy, Mr. White says (p. 33) that he comparatively rarely removes the incus because it is comparatively rarely diseased, a statement certainly not borne out by facts, as of all the ossicles the incus is the one most frequently found carious. Moreover, what possible function can the incus have in those cases where the malleus has already been removed?

Mr. White says (p. 47) that an otectomy will sometimes give "immediate relief, even when meningitis has existed for some time, no doubt by lessening tension and securing a free discharge of blood, serum, and possibly pus," and proceeds to give records of cases in which secondary meningitis had developed and in which otectomy had been performed. In several of the cases we fail to find any symptoms diagnostic of meningitis, but note evidences of pent-up pus in the tympanum.

That many forms of intra-meatal treatment will arrest and cure middle-ear suppuration if efficient drainage be provided and if no serious implication of bone be present, is merely reiterating a well-known truth, but that an otectomy in the sense in which Mr. White uses the term is sufficient to arrest the frequent and severe complications of purulent middle-ear disease is asking the reader to be altogether too credulous and simple.

While admiring Mr. White's zeal and persistent advocacy of intra-meatal treatment, we consider that it does not possess all the charms which the author would have us believe.

W. Milligan.

## CORRESPONDENCE.

*To the Editor of the JOURNAL OF LARYNGOLOGY.*

SIR,—Having read Dr. Tilley's excellent articles on the "Antral Disease in Relation to Special and General Surgery," I should be very glad if you would allow me, as a reader of your JOURNAL, space for a few words with reference to the summary of his conclusions as stated on pp. 618 and 619 of the last number of the JOURNAL OF LARYNGOL., RHINOL., AND OTOL.

Dr. Tilley recognises three methods of getting rid of empyemata of the antrum (sinus maxillaris), by means of: (1) The alveolar route; (2) intra-nasal drainage; (3) the radical Caldwell-Luc operation.

We know that the success of the treatment depends only on the condition of the mucous membrane of the antrum. If it is wholly degenerated, only the removal of the diseased portions can avail (Caldwell-Luc method). The most logical method is Dr. A. Jansen's (Berlin), who in every case examines the condition of the antral mucous membrane, opening the antrum through the fossa canina ("Probatorische Freilegung der Antrüm Schleimhaut").

Most of us are not so radical, but if the symptoms give us hope we first attempt a cure by syringing.

For these cases Dr. Tilley, in common with many others, recommends the alveolar route for cases of dental origin, and the intra-nasal route for cases of intra-nasal origin.

I think, however, that if a case can be cured by syringing, the same effect can be obtained whether the nozzle of the syringe is inserted through the alveolar hole or through the nose, independently of the origin of the empyemata.

In deciding which route to use we must consider merely the anatomical condition of the patient's nose and mouth, and sometimes also other circumstances. It is true that it is a barbarism to extract a sound and useful tooth; but the loss of the anterior end (perhaps anterior half) of the inferior turbinal cannot in all cases be considered "of no practical moment." I need only call your attention to the possibility of pharyngitis.

I am, sir, yours faithfully, Dr. REJTÖ SÁNDOR.

BUDAPEST, November 14th, 1908.

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#### APPOINTMENTS.

**London County Council**, as Medical Inspector of Deaf Schools: Mr. P. Macleod Yearsley, F.R.C.S.

**Hospital for Diseases of the Throat, Golden Square**, as Assistant Surgeons: Mr. G. W. Badgerow, Mr. Norman Patterson, F.R.C.S., Mr. G. S. Hett, F.R.C.S.

**Central London Throat and Ear Hospital**, as Assistant Surgeon: Mr. J. Gay French, F.R.C.S.

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**Received for Review.**—"Nebenhöhlen der Nase" ("Pathology and Treatment of the Inflammatory Diseases of the Accessory Sinuses of the Nose"). By Dr. M. Hajek. 3rd enlarged edition. Franz Deuticke, Leipzig and Vienna, 1909.



THE  
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RHINOLOGY, AND OTOTOLOGY.

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**SUPPURATIVE MEDIA OTITIS WITH MASTOID SYMPTOMS  
AND INFECTIOUS PSEUDO-RHEUMATISM OF NASO-  
PHARYNGEAL ORIGIN.**

*(Contribution to the "Paratuberculoses" of Poucet and Leriche.)*

BY DR. LOUIS BAR,  
Oto-rhino-laryngologist to the Hospital at Nice.

(Translated by K. DICKSON.)

THE following case is worthy of interest from the diagnostic and prognostic points of view.

In January, 1906, we were consulted by a young girl, aged fourteen, who came from Siberia with acute suppurative otitis of the right middle ear, contracted in November, a few days before her departure from Tomsk. Whilst passing through Moscow, as the aural discharge had ceased in a premature manner, myringotomy was considered necessary, and the patient went away immediately to Nice to recover. Shortly before this attack of otitis the patient had suffered from articular rheumatism, without local redness, but with swelling, chiefly of the knee.

Pale, anæmic, very much overgrown, this young girl had sprung from parents who were very healthy, strongly constituted and extremely arthritic. Although delicate, her health had been satisfactory up to that time, but for the last few years she had blown from her nose an abundance of mucus and fætid crusts. The patient, who had ozæna, and whose nasal mucous membrane

was visibly atrophied, constantly had redness of the naso-pharyngeal mucous membrane, inflamed by the muco-purulent secretions which, during the night, ran down from the nose into the throat; the tongue was generally coated—an evidence of the gastric infection which the muco-pus (unconsciously and continually swallowed) caused in the primary digestive tract.

In the month of January, when the patient came to see us, she showed no sign of rheumatism, and we only thought of treatment of the nasal fossæ, the evident cause of the otitis, when on January 24 she suddenly developed a febrile condition, the temperature averaging 38° C. (100.4° F.). At the same time there was a diminution in the aural discharge, and pain round the mastoid with tenderness and swelling over a circular space of about 5 cm. in diameter. Further, there developed epiphysial pain of the right elbow and slight cough.

This pathological condition was accentuated the next day, there being a temperature of 40° C. (104° F.), a pulse which oscillated between 125 and 140, some nausea, pain round the mastoid, diminution of aural discharge, and diminution of the contractility of the pupils. Some clots of blood came from the nasal fossæ at the same time as the naso-pharyngeal purulent mucus; to these local conditions there was then in addition distinct tenderness in the right iliac fossa.

The question of a mastoid operation was raised on account of the existing symptoms, as it was doubtful whether the painful swelling round the mastoid were not a symptom of a local osteomyelitis which corroborated the other local or general signs.

In spite of the fear of rapid necrosis of the mastoid bone, which is always to be dreaded in the presence of symptoms as serious as those shown by the patient, we decided to wait until the next day, having resolved not to temporise any further if there were not real relief.

During the delay thus accorded an almost sudden and very remarkable amelioration took place to the extent that the next morning the tenderness over the mastoid was partly absent, the swelling less, and the fever had ceased. There was still a little inequality of the pupils and slight headache; the movements of the head in every direction were normal; there were no abnormal reflexes or pathological sensitiveness, in fact, no sign of meningeal stimulation. There was nothing in the respiratory passages except the pathological condition of the naso-pharynx. A day later the tympanum, which was less swollen, became more of an actual

pinkish colour, whilst the mastoid region became less and less tender and the general condition more satisfactory, except for some abnormal tenderness at the insertions of the abdominal muscles.

On the 27th, that is to say three days after the alarming state for which the necessity for operation had been feared, the condition was fairly good, and whilst the mastoid region seemed more and more free the tympanum resumed its normal aspect, without, however, the hearing being completely restored.

From this time the ear remained normal, in spite of the serious naso-pharyngeal condition, and we had before us the evolution of an infectious pseudo-rheumatism with intermittent but frequent febrile attacks, showing itself sometimes in the costal cartilages, sometimes in the spinal processes of the vertebrae, sometimes in the epiphyses of the long bones, sometimes in the joints of the fingers and the wrists, and in the external lateral region of the knee. It was usually a single joint which was involved, seldom many at a time. The region would be red, stiff, hot, painful, and extremely tender, this condition being transitory. Finally, a systolic sound at the apex directed towards the armpit was noted.

This young girl had been ill in this way for two or three months, and at the moment of her departure from Nice she did not seem to be quite cured, whilst her naso-pharynx resisted constant disinfection.

Analysis indicated the absence of Koch's bacillus, but some streptococci.

The case of this patient, whose history we have related under the above title, is an essentially interesting and curious one.

In fact, it concerns a patient who, from undoubted naso-pharyngeal origin, was affected with suppurative otitis with paramastoid phenomena resembling osteo-periostitis, whilst during the weeks which followed she had some painful arthritic cutaneous and osseous manifestations, such as infectious ambulatory pseudo-rheumatism is alone capable of producing.

What interpretation can be given of these para-mastoid manifestations, occurring along with the suppurative median otitis? Were they signs of mastoiditis occasioned by the purulent catarrh of the antrum or simply a sub-periosteal abscess very probably connected by the lymphatics with the cavities of the middle ear? Careful examination indicated that that part of the mastoid region which was painful on pressure was limited to the base of the mastoid to the extent of about 2 cm. in diameter with false fluctuations and slight redness.

Besides, it was seen that this pathological state appeared suddenly and disappeared suddenly. And all this took place in such a way that when the other phenomena of pseudo-rheumatism appeared we were able to establish the relations between them and the pseudo-rheumatic manifestations. These relations were so evident that they enabled us to class this para-mastoid inflammation as definitely independent of the suppurative median otitis and among the rheumatic affections of the subcutaneous cellular tissue, already described by Troisier and Brocq,<sup>1</sup> by Chuffart,<sup>2</sup> Meynet, Brissaud, and again, but earlier, by Davaine<sup>3</sup> under the name of "rheumatismal œdema" and "ephemeral rheumatismal nodosities."

The case of this patient is all the more interesting as we pass from the domain of oto-rhinology into that of general pathology and thorough pathogenesis.

The naso-pharynx was the first part to be infected, as indicated clinically and by the streptococci found in the patient's naso-pharyngeal mucus. From there the infectious organism produced such rheumatic developments as take place in the course of general and infectious diseases (scarlatina, dysentery, blenorragia), or as are found associated with the different stages of pregnancy and the puerperium. Also, on the very complex diathetic soil of the young patient, the microbe was able to exercise its virulent action with ease, and this with all the more intensity, as although the offspring of healthy but extremely arthritic parents, the patient was delicate and frail. Of decidedly arthritic origin by her parents, the young patient had, in fact, the appearance of being very anæmic, and showed every suspicion of being tuberculous, although bacteriological examination indicated the absence of the Koch bacillus. What, then, did these ambulatory rheumatic or pseudo-rheumatic symptoms signify? The new ideas of Poncet and Leriche (of Lyons),<sup>4</sup> who used to claim that the arthritic or supposed arthritic patients were often only tuberculous subjects, throw fresh light on the opinion formed in regard to this consideration, and furnish, in the conception of this word "paratuberculosis," proposed by Poncet and admitted by Fournier, the title to be supplied to the pathological condition of our patient. The disease of the young girl had, in fact, evolved in the manner indicated in many works

<sup>1</sup> Troisier and Brocq, "Transient Subcutaneous Nodosities and Rheumatism," *Revue de Médecine*, 1881 and 1888.

<sup>2</sup> Chuffart, "Aggrégation Thesis," Paris, 1886.

<sup>3</sup> Davaine, "Paris Thesis," 1879.

<sup>4</sup> "Inflammatory and Arthritic Tuberculosis," *Académie de Médecine*, January 2, 1907 (Poncet and Leriche).

of this kind, and the symptomatology of this condition (painful circumscribed or diffuse œdema, or purpura) with signs analogous to those of certain skin diseases formerly looked upon as arthritic, seemed to be dependent on a tuberculous, purely inflammatory process, such as had in a word been defined by Poncet in his "Tuberculous Abarticular Rheumatism." A fact which would further be in favour of this conception of "paratuberculosis" is that the internal organs remained normally sound; the external lesions, most often limited to the skin, were inflammatory abarticular lesions, and they may be constantly summed up as febrile inflammatory œdemas, among which, in spite of their disquieting appearance, was the "para-mastoid inflammation" which had given the patient's doctors such great anxiety, inflammation analogous to that of the rheumatic œdemas more or less rapidly transient, to which Fereol,<sup>1</sup> Davaine,<sup>2</sup> and more recently Troisier,<sup>3</sup> Brissaud,<sup>4</sup> Chuffart,<sup>5</sup> etc., have given so much study. Finally, did not the chronic naso-pharyngeal lesions, which, once awakened up, were apparently or undoubtedly scrofulous in our patient, represent a form of those attenuated tubercloses which have often been taken for arthritic conditions, and which appear undeniable to those who know that the children of arthritic subjects are very much pre-disposed during their early years to the same inflammatory and catarrhal manifestations in the ligaments and mucous membrane as the scrofulous children of scrofulous parents? (Legendre).<sup>6</sup>

From all these considerations the following conclusion seems to follow. The history of this arthritic woman is that of more or less latent tuberculosis. It only remains to ask oneself if the pseudo-rheumatic lesions which were produced are the expression of the virulent tuberculosis, in the same way as the ephemeral subcutaneous rheumatismal nodosities have appeared to Brissaud, as the result of his analysis of numerous observations, to be the lesion prognostic of very serious rheumatism. According to Poncet, who has tried to solve this prognostic question, these arthritic lesions, so-called, would simply be the expression of the benign local tuberculosis found in tuberculous children and not tuberculous

<sup>1</sup> Fereol, 1879, Communication to the Congress for the Advancement of Science.

<sup>2</sup> Davaine, "On Rheumatoid Œdema and Transient Rheumatoid Nodosities," Paris, 1879.

<sup>3</sup> Troisier, *Revue de Médecine*, 1881.

<sup>4</sup> Brissaud, 1890, "Rheumatoid Bubo and its Prognostic Value."

<sup>5</sup> Chuffart, "Aggrégation Thesis," 1886.

<sup>6</sup> Legendre, *Traité de Médecine*, p. 313.

adults: the non-specific tuberculosis only causes an ordinary inflammatory reaction in the tissues, but is capable of being the "initial disease"; at first hidden, it only expresses itself at the peripheries by specific lesions of ordinary appearance, in the first instance; throwing off the mask more or less suddenly, it finally takes the classical appearance of granular and excavating lesions.

In short, it is important to remember that rheumatism can show itself locally with all the alarming aspects of a true mastoiditis, with such a symptomatology that it may lead to too hasty intervention.

Everything being considered, there are only present in the occurrence the subcutaneous rheumatismal œdemas of the mastoid region, transitory œdemas occasionally parallel to deep-seated auricular troubles, the analysis of which would avoid useless mastoid operation. These local and subcutaneous affections are liable to occur in these transitional arthritic subjects who, having sprung from decidedly and thoroughly arthritic parents, have exhausted their power of resistance and become progressively the types of a particular constitution. These types are—according to Poucet's expression—"paratuberculous" species of the degenerated arthritics, yet refractory to the severe internal tuberculosis; they are very favourable, on the contrary, to local tuberculosis in the skin, joints or elsewhere, spoken of as "*petites tuberculoses*," with which they slowly exhaust themselves.

## THE MODERN TREATMENT OF SYPHILIS, ESPECIALLY IN REGARD TO THE UPPER RESPIRATORY PASSAGES.<sup>1</sup>

By W. A. LIEVEX, M.D.

(Aix-la-Chapelle).

WITHIN the last few years considerable progress has been made in the diagnosis of syphilis. The microbe of syphilis, the *Spirochaeta pallida*, has been found, and we now know from the investigations of Wassermann, Bruck, and Neisser that the serum of a syphilitic contains bodies which are only to be found in people infected with syphilis. On the other hand we have not progressed very far as regards the means of fighting against this disease. Mercury and iodide are still the most important, if not the only reliable, remedies. The experiments in serum-therapy have un-

<sup>1</sup> Introduction to a Discussion in the Laryngological Section of the Royal Society of Medicine, on January 8, 1909.

fortunately all failed, and the preparations of arsenic which have been employed during the last two years are neither reliable in their results nor are we acquainted with the exact indications for their use. I will speak first of the various anti-syphilitic drugs, and in the second place give an outline of the methods of their employment.

Mercury still remains the most important remedy. Neisser in Batavia studied the influence of all the different drugs which are employed in the treatment of syphilis upon a large number of anthropoid apes and monkeys, and the results showed (1) that mercury not only assists the organism to defend itself against the spirochaeta, but also kills the microbe; (2) that inoculations made from the internal organs of a syphilitic monkey which has been sufficiently treated with mercury are incapable of transferring the virus to another animal; (3) that a syphilitic monkey which has been brought sufficiently under the influence of mercury to effect a cure can be reinfected a second time with syphilis. I should also like to remark that similar results can be obtained by the use of atoxyl. Unfortunately the human race cannot tolerate such large doses of atoxyl without danger to the optic nerve. All these facts afford theoretical confirmation of the experiences of daily practice.

There are different methods of administering mercury to the organism. When given by the mouth absorption is carried out by the gastro-intestinal tract, when injected, by the subcutaneous or muscular tissue, whilst in the case of inunction the skin and the lungs participate in the absorption of the metal into the system.

As regards the treatment of syphilis by the mouth, in Germany we are all agreed that this method is insufficient to obtain a satisfactory result. I have not only seen a great many relapses of a secondary and early tertiary character, occurring during the first two years of the course of the disease whilst mercury was constantly being taken, but during seventeen years' practice in Aix-la-Chapelle I have noticed that after no other form of treatment were there so many severe symptoms in connection with the central nervous system as after a pill cure, as it is still carried out in England. In addition to its inefficiency in combating the disease it has the great drawback of very easily producing a chronic enteritis, and when taken for any length of time a chronic stomatitis of a most distressing character. The stomatitis, due to rubbings or injections, is generally shown by a dark red mucons membrane, whilst the gums, during treatment by the mouth, often present a pale and

dirty appearance, and exhibit a tendency to considerable retraction. At the same time this form of stomatitis is not by any means a sign that there is an energetic action upon the syphilis, because it is not a rare occurrence to find recent mucous patches on the mucosa of a patient who is suffering from this particular variety of stomatitis. The theoretical investigations made by Bürgi and others furnish an explanation for this. He found that the mercury is rapidly eliminated and disappears from the urine within a few days after the administration of it is stopped.

The second method of treatment of which we must speak is that of hypodermic injections. We inject either soluble preparations of mercury or insoluble ones suspended in an oily medium. The soluble ones were introduced by Lewin, of Berlin, in 1867. His custom was to inject a 1 per cent. solution of corrosive sublimate. Since then a great many different preparations have been employed which it is impossible to describe here. I am in the habit of using the French "Bi-iodure de Mercure" (2 per cent. solution), because I find it practically painless and its effect as good as any of the others. An injection of 1 c.c. or 15 $\mu$  is given daily for twenty to thirty days. There are two drawbacks to the administration of soluble salts of mercury: (1) The necessity for seeing the doctor every day, and (2) the fact that the mercury, though effective at the time, very soon disappears from the system. Relapses occur more frequently than after the insoluble preparations.

Of the latter the following are in general use: Calomel, grey oil and salicylate of mercury. The two first are injected in a 40 per cent. strength. One employs a special syringe (Barthélémy's), and in the case of calomel injects up to eight divisions once a week, or if *huile grise* is used up to twelve divisions once a week. One division of this syringe is measured to contain one centigramme of mercury of a 40 per cent. preparation. The syringe is indispensable for calomel and grey oil, as it is impossible to give exact doses with the usual Pravaz syringe. Six to eight injections of calomel, ten to twelve of grey oil, and eight to ten full Pravaz syringes (1 c.c. or 15 $\mu$ ) of salicylate, are considered sufficient for a full course. There is no doubt that these injections have a great many advantages. We are certain of the quantity the patient is getting, and the treatment can be carried out without giving rise to any suspicion in the patient's surroundings. The method also is convenient, as the patient requires to see his doctor only once or twice a week. Last, but not least, there is the fact that the results of this kind of treatment are very satisfactory.



The most effective of the three preparations is calomel, whilst the grey oil has a much slower, but generally sufficient, effect. Between these two stands the salicylate of mercury, which it is right to say is used with excellent results by many physicians in Germany. Its curative effect is sufficient, it is generally painless, and there seems to be hardly any danger in its administration.

This leads me to speak of the disadvantages of the insoluble preparations. Calomel is extremely painful, although this drawback has to a certain extent been overcome in Levy-Bings and Neisser's new suspensions. Aseptic abscesses are common, and one sometimes observes that two or three days after such an injection the patient has an attack of shivering followed by some fever. This attack is called by the French "*la grippe mercurielle*." Against these injections is to be urged the fact that when once an injection is made the medical man is no longer in a position to influence the degree of rapidity of the absorption. When this takes place too rapidly severe symptoms may appear. It is possible that a dose of an insoluble salt of mercury may lie dormant for months, and then pass rapidly into the circulation, giving rise to urgent symptoms. Even fatal results have occurred from this cause. The salicylate seems to be practically without danger, and I therefore consider it the only preparation fit for the routine treatment of syphilis, whilst I reserve calomel for the malignant forms, in which a rapid result is requisite, and everything else has failed.

Whichever insoluble salt we employ, it will always be most important that the "technique" should be carried out most carefully. First we should introduce the needle, in order to ascertain whether a vein has been penetrated. For the same reason I always inject into the upper part of the buttock, above a horizontal line joining the tops of the trochanter major, and preferably in the upper and outer quadrant. Under no circumstances whatever should injections be given in cases of diabetes or Bright's disease.

In our country, owing to the many disadvantages, if not dangers, associated with injections, the majority of the profession prefer treatment by innunction. The teachings of Sigmund have made it clear that innunctions can be carried out without necessarily producing mercurialism. The evolution of the present method of innunction is due to these principles. At Aix-la-Chapelle the routine of rubbings has especially been brought to perfection, and it is due to that place that this treatment has regained its reputation on the Continent of being the method which combines the greatest therapeutical effect with no danger whatsoever to the patient, because

one can at any time stop the absorption of mercury by simply washing off the ointment. I admit that the treatment by innunctions is difficult to conceal from the patient's surroundings, and that the cure deserves the name of being dirty and disagreeable, but in spite of this its advantages are so great that whenever I have asked a medical man in our country what kind of treatment he would prescribe for himself, there was no one who did not reply, "Innunction."

Innunction, however, ought to be carried out very carefully. The process is as follows: With the bare hand the requisite quantity—*e. g.* 4 grm. to 5 grm. of 33 per cent. grey ointment—is evenly rubbed into the skin by the patient himself for a period of at least twenty minutes, and after this time, if the innunction has been properly carried out, the skin should appear dry and not shiny. On the first day both calves are rubbed; on the second, the left; on the third day, the right thigh; on the fourth day, the abdomen and flanks; on the fifth day, both arms. During these five days no bath is taken, and there should be no change of underwear. On the sixth day the whole body is thoroughly washed with soap in a bath. These courses of five days are repeated again and again until the requisite number of rubbings has been reached. If there is a reliable masseur at hand, both thighs should be rubbed on the second day, and the back on the fifth day. This is the best way of carrying out the cure at home or at the hospital.

At Aix, however, we enable the patient, by the use of the thermal waters, to absorb and to tolerate much larger quantities of mercurial ointment than those mentioned above. The daily rubbing is preceded by a sulphur bath of about 95° F., in which the part which is to be rubbed later is carefully washed with soap. The alkaline water softens and removes the superficial layers of the epidermis, thus opening the pores for the absorption of the ointment. The temperature of the bath is not high enough to remove the ointment in the bath unless it is washed off with soap. The mercury does not penetrate the normal skin, but is rubbed into the pores, where it is converted by the secretion of the sebaceous and the sweat-glands into combinations capable of being absorbed by the system, and when absorbed circulates in the body as an albuminate. It is also absorbed by inhalation. The baths and drinking waters promote metabolism, thus giving the mercury an opportunity to enter into new combinations with fresh albumen, and consequently to be distributed to its fullest extent throughout the system.

The two most unpleasant symptoms of mercurialism—namely, stomatitis and colitis—may be observed with every form of

treatment, but they can be almost certainly prevented by careful attention being bestowed on the buccal cavity and on the regulation of the bowels. During the cure the teeth must be cleansed after each meal by means of a soft tooth-brush with a tooth-paste of salol and chlorate of potash. The mouth also must be rinsed every hour with a solution of aluminium acetico-tartaricum. Mercurial ulcerations of the gums are cured in a few days by being touched with a concentrated solution of chromic acid. It is essential to remove all *debris* from the space between the gums and teeth before painting. Naturally, careful rinsing of the mouth after the application of so strong a drug is essential.

The intestinal tract should be attended to, and care should be taken that the bowels are thoroughly opened every day in order to eliminate the mercury secreted into the intestines. The sulphur water at Aix is often sufficient to ensure a daily motion, and the hydrogen sulphide in it acts upon the mercury so as to produce the comparatively innocuous black sulphide, thus reducing the irritation of the gastro-intestinal mucosa to a minimum.

In cases where diarrhœa occurs, even if associated with blood in the stools, a dose of 25 drops of laudanum, if necessary repeated again in eight to ten hours, and the removal of the ointment by means of a soft bath, will certainly stop the diarrhœa.

The second remedy—namely, iodide—is more useful in tertiary manifestations. Its chief action consists in promoting absorption of specific neoplasms which characterise this stage. One, however, obtains good results with iodide in certain secondary symptoms, such as vegetating patches, which are chiefly found at the entrance of the nasal passages and on the floor of the mouth. The preparation which works most quickly is iodide of potassium, and no other preparation of iodine equals it in effect, so that it should invariably be used in cases of imminent danger to life or important functions, or in those cases in which a rapid diagnosis is required, as, for instance, in the case of a growth of doubtful character. Unfortunately, very often this drug or other preparations of iodine cannot be given on account of the occurrence of severe iodism. In these cases a daily prescription of 15 gr. of sulphanilic acid in 7 oz. of water will be found most successful in preventing this unpleasant symptom.

If the patient should be quite unable to take iodide of potash by the mouth, I prescribe sajodine, 3 to 8 tablets of  $\frac{1}{2}$  grm. per day. It has a mild and prolonged effect, and is eliminated more slowly than iodide of potash. This is still more the case with

subcutaneous injections of iodipin, which I inject in doses of 20 grm. to 30 grm. three times a week. The total course is 250 grm. This quantity is sufficient to put the system under the continuous mild effect of iodine for about six months. This method, therefore, is of great prophylactic value, and very useful when the patient cannot be trusted to take iodide by the mouth as regularly as he ought.

As you all know preparations of arsenic have recently been tried in the treatment of syphilis. The sodium amyarsenate (atoxyl) has been given up in our country on account of the repeated occurrence of unpleasant symptoms; several cases may be mentioned in which total atrophy of the optic nerve resulted. Researches undertaken with the object of finding another less poisonous preparation of arsenic have led in England to experiments with soamin (sodium para-aminophenylarsenate), and in Germany to experiments with arsacetin (acetylanilarsenate), which is similar to the orsudan of Burroughs and Wellcome.

The number of cases treated with these two preparations is not sufficient to induce me to recommend the use of these drugs in general practice. I think Neisser is right when he says that only perhaps after twenty years of experience with an enormous number of cases shall we be entitled to say anything about the real therapeutic value of arsenic.

After this scheme of general treatment I should now like to speak about the time when treatment should be commenced, and the duration of the course requisite for a complete cure. I am of opinion that in the case of a sore which is suspected to be of a primary nature the diagnosis ought to be certain before treatment is commenced. This is especially necessary, because chancres of the upper respiratory tract are sometimes extremely difficult to diagnose. If the spirochaeta cannot be found one must wait for a few weeks for the appearance of the roseola or examine the case by the serum test, which, however, is unfortunately only to be obtained several weeks after the appearance of the chancre. An exception should be made in those cases where the doubtful sore is in a prominent position, or where the patient comes into close contact with other people.

For the first course I generally prescribe forty to fifty rubbings of 5 grm. each. At Aix, if the patient stands mercury well, I let him have two rubbings per day of 4 grm. to 5 grm. each during the last fortnight. If he is anæmic I give him three to four injections of sodium arsenate three to four times a week. Though

the primary sore and secondary eruptions generally disappear within a fortnight after commencement of the cure, it ought always to be carried out to its full extent. The care of the mouth should be continued for a fortnight after each course. Three further courses of rubbings should follow at intervals of six months. If there has not been a relapse during the first year of treatment the fourth course may be postponed until the end of the second year. I wish to lay stress upon the necessity of carrying out these treatments, even if a relapse should not have occurred.

Should it be impossible to give injections on account of social reasons or owing to the irritability of the skin, I substitute eight to ten injections of salicylate of mercury in vasenol. When rubbings cannot be given and intra-muscular injections are not tolerated, then and then only do I decide to give internal treatment. I am in the habit of prescribing the tannate of mercury in doses of 1 decigramme three times a day in pills. These are taken for six weeks, followed by an interval of two months' rest, and so on for a period of two years.

Before speaking about the local treatment of the different forms of syphilis in the nose, mouth and throat, I should like to say that in most cases general treatment suffices, and local methods can be dispensed with. If the chancre is situated on the lips or on the outside of the nose it ought, for cosmetic and prophylactic reasons, to be covered by a mercury plaster (Beyersdorff No. 15). For chancre inside the nose an indifferent spray, followed by the insufflation of nosophen, is sufficient in every case. Chancres in the mouth or pharynx ought not to be cauterised, as they heal very quickly under general treatment, but they may early require the dusting on of some orthoform, as they are extremely painful.

Relapses of a secondary type on the mucous membranes are generally more resistant to treatment than lesions occurring at the commencement of the disease, which as a rule promptly yield to general treatment. The most useful remedy for patches of the *erosif* or "ulcerated" type (Fournier) is the application of a concentrated solution of chromic acid; the mucosa ought to be carefully dried before the drug is administered in order to prevent it from spreading. If a very adhesive scab is required one should paint over the chromic acid a 10 per cent. solution of silver nitrate. The scab will then become bright red in colour, owing to the formation of silver chromate. Some patients with ulcerated patches on the edges of the tongue suffer considerably from profuse salivation, which easily loosens the scabs produced by

cauterisation. The giving of belladonna will in many cases minimise this. Mucous plaques of the introitus narium or cracks at the angles of the mouth should, after cauterisation, be covered with 5 per cent. white precipitate ointment.

If shortly after an energetic course of treatment a relapse occurs with secondary symptoms on the mucosa, it is not wise to at once give another full course of treatment. It is often possible to overcome these manifestations simply by local treatment. Should this not be followed by success another mild treatment may be advisable, such as wearing a mercolint flannel on the chest or taking mercury tannate pills for three to seven weeks. By these measures it is practically always possible to keep the patient going until the time arrives for beginning the next full course of rubbings, as specified in our scheme. Smoking is very often the reason of the constant relapses, and you will often find that from the moment the patient abstains from tobacco the patches cease to appear.

In any case one should try to keep as near as possible to the chief courses of treatment as prescribed in the scheme. It stands to reason that extremely severe cases may make it necessary to give the patient more frequent treatments. At the end of the first year my patients begin to take iodide. I give 10 gr. three times daily for three to four weeks, after the third and fourth cure. Or I give a course of injections of iodipin up to a total of 250 grm. during the inunction treatment itself.

The laryngologist does not often have an opportunity of observing a case of syphilis from the beginning. He sees more cases of a tertiary nature, where iodide is the sovereign remedy for a quick result. Thirty grains daily ought to be given at least. If one of the substitutes of KI is to be given one must bear in mind that a favourable result cannot be expected so quickly. In ulcerated *tertiaries* I always give iodide of potash *alone* for four or five days, and only when, from its appearance, the ulcer shows a tendency to healing, do I start inunctions. After the tertiary ulcers are healed iodide is stopped, and iodipin injections are employed whilst the rubbings are continued. We expect the inunctions and iodipin together, on account of their prolonged effect, to prevent relapses, which iodide of potash alone often fails to do.

In addition to tertiary cases of a regular type, there are others that from the very beginning show a malignant character. They sometimes show themselves a few months after the primary sore; sometimes they even develop from persistent secondary eruptions. The malignant form of syphilis is often not cured by ordinary

courses of mercury and iodide, but gets worse and worse. I have seen cases of ulcerations in the upper air-passages which after each dose of iodide showed a sudden breaking down of the infiltrated tissue, and when the iodide was stopped the reaction ceased.

In these desperate cases it is advisable to try injections of calomel, which should not be given at the same time as the iodide. After a few injections of calomel I have seen a marvellous improvement take place, and this was followed by the extraordinary fact that afterwards these cases could be treated in a similar manner to ordinary tertiary cases.

As local treatment I recommend mercurial plaster for all ulcers of the lip and the outside of the nose; for those in the nose itself tampons, covered with a 10 per cent. ointment of eucalypti, have a clearing and healing effect. The crusts are also easily removed by these tampons. If the granulations of tertiary sores are not sufficient, they ought to be painted with tincture of iodine. This is often required on the posterior wall of the pharynx, as there is very little tendency to healing owing to the very poor vascularisation of this part. Sequestra ought not to be dealt with until they become loose. It may be necessary to cut them into several pieces by nasal forceps if they are too large to be pulled out in one piece. In two cases I made an incision in the naso-labial fold in order to remove a large piece of bone. The extraction, even of large sequestra, is generally comparatively easy, because the septum is, as a rule, partially destroyed before the other parts of the nose become involved, and thus more room is afforded for handling the necrosed bone. I will not refer here either to the treatment of perforations of the hard and soft palate or to the plastic operations or paraffin injections which are employed in the treatment of deformities of the nose.

Adhesions of the soft palate to the posterior wall of the pharynx ought to be separated if there is enough of the muscular tissue left to ensure the closure of the naso-pharynx during deglutition. If the patient is unable to do this after the operation he is worse off than before, for his voice retains an abnormal character, and in addition to this all food passes into the naso-pharynx and the nose. Several forms of apparatus have been introduced to keep the soft palate separated from the posterior wall of the pharynx after operation: a vulcanite plate fixed by a spring to the teeth, or an indiarubber ball lying in the naso-pharynx, which is filled with air by means of a tube passing through the nose. A case exhibiting a good result was shown at this Society, the

apparatus used being a lead plate fixed by strings which passed through the nose and mouth.

Tertiary processes in the larynx require energetic general treatment, as there is a marked tendency to cicatricial narrowing of the larynx in these cases. We must bear in mind that fibroid metamorphosis may result from infiltration of the larynx without any sign of ulceration. The methods of dilating these contractions are the same as those employed in the treatment of narrowing of the larynx from other causes.

I wish to draw your attention to the rare tertiary cases, first described by Sir Felix Semon, in which warty excrescences appear in the larynx, and if localised on the vocal cords may cause considerable dyspnoea. These new formations ought not to be treated by local measures or by operation, as they always yield to general treatment, though I do not wish to hide the fact that an energetic and prolonged treatment is necessary.

Last, but not least, I should like to draw your attention to the necessity of treating the swellings of the local glands, which nearly always persist to a certain degree after the general treatment. I advise the patient to massage these swellings with  $\frac{1}{2}$  grm. of blue ointment before going to bed for a period of a fortnight. This should be repeated from time to time.

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## SOCIETIES' PROCEEDINGS.

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### PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

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*Meeting on February 5, 1909.*

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DR. DUNDAS GRANT, *President, in the Chair.*

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*Abstract of Proceedings by DR. DAN MCKENZIE.*

The following cases and specimens were shown :

CASE OF TERTIARY SPECIFIC COMPLETE ATRESIA OF THE POSTERIOR  
NARES IN A MIDDLE-AGED WOMAN.

BY DR. DUNDAS GRANT.

Operation, December 18, for detachment of the soft palate from the posterior wall of the pharynx, including removal of a



portion of the hard palate at its junction with the vomer, so as to increase the distance between the soft palate and the posterior wall, and to diminish thereby the risks of re-closure. Mooring of soft palate to the front teeth by means of suture for two days. Patient could now blow the nose, which she was previously quite unable to do; articulation good; no regurgitation on drinking.

CASE OF MALIGNANT SPECIFIC ULCERATION IN A YOUNG MALE  
PATIENT, PREVIOUSLY SHOWN JANUARY 12, 1906.

BY DR. DUNDAS GRANT.

Ulceration with great pain had occurred within a year after the primary infection, and did not yield to iodide of potassium and mercury. At Dr. Lieven's suggestion intra-muscular injections of calomel were administered, and the patient was shown again on February 2, 1906, with complete subsidence of the ulcerative process.

Dr. McBRIDE asked in what form mercury had been administered, and whether the treatment had been carefully carried out.

The PRESIDENT stated that the inunctions of mercury had been made under the direction of a very careful practitioner, though probably less thoroughly than at Aix-la-Chapelle.

Mr. BARRY BALL asked how long the injections had been continued, and whether any other treatment had been adopted.

The PRESIDENT said that eleven injections were administered, three at intervals of a week, then eight at intervals of three days, at the end of which time the throat was practically well.

Dr. DONELAN asked whether treatment had been stopped after the symptoms quieted, or was it still being carried out?

The PRESIDENT said that iodide of potassium was continued for some time longer.

Sir FELIX SEMON said the case emphasised the importance of not being bound down to any particular mode of treatment. All cases should not be treated in the same way. Dr. McBride had asked whether inunction had been tried, but the speaker directed attention to the fact that inunction was not infallible, even as practised at Aix.

The PRESIDENT considered the case an apt illustration of the views expressed by Dr. Lieven and Sir Felix Semon, and it might well be called one of "syphilis maligna præcox."

A CASE OF THYROTOMY WITH RESTORATION OF EXCEPTIONALLY  
GOOD VOICE.

BY SIR FELIX SEMON.

The patient, a gentleman, aged forty-five, was sent on March 3, 1908, by Dr. Kochmann, on account of hoarseness. Nothing but congestion of the vocal cords was visible at that time in the larynx.

When seen in June, 1908, by Mr. Tilley, a small tumefaction of granular appearance had developed on the front part of the right vocal cord, the movements of which were still perfect. The little tumour slowly increased in size, but as it was extending towards the anterior commissure, it was decided, after consultation with Mr. Tilley and after Mr. Butlin's independent opinion had been obtained, also, to the effect that an exploratory thyrotomy was indicated, to perform this operation, which accordingly was done on July 28, 1908. The entire right vocal cord was removed with the growth on it. Dr. Kochmann assisted, and Mr. Shattock was present and examined the small growth immediately after removal, when it was found to be a typical squamous-celled carcinoma. The patient very quickly recovered from the operation, and had regained so surprisingly good a voice that this was the cause of his being shown to the Section. It was indeed hard to believe that the right vocal cord had been removed *in toto*. Its place was taken by a cicatricial ridge, which in this instance did even better service than was usual in such cases.

Dr. STCLAIR THOMSON was puzzled to know why a good voice was obtained in this case and not in others. Did Sir Felix Semon coapt the choanæ? He recalled a case in which the voice after operation was good, but not so good as in the present instance, because the new cord was not on the same plane with the old.

Mr. HERBERT TILLEY remarked that the case exemplified the fact that free mobility of a cord did not necessarily exclude malignant disease. Potass. iodid. was tried and effected no improvement in the local conditions. Even at the operation the growth was small, and unlike epithelioma. The lesson of the case was that mobility does not exclude epithelioma.

Sir FELIX SEMON, in reply, emphasised the importance of an accurate co-adaptation of the two halves of the thyroid cartilage. At the operation he always attended to this detail himself, and got his assistant to pass the sutures. The suture through the cartilage must not penetrate the larynx, or granulations were prone to form in the anterior commissure and to interfere with the subsequent adduction of the cords during phonation. He had known these post-operative granulomata mistaken for a recurrence and operated upon. It should be remembered, however, that post-operative tumours did not necessarily mean recurrence. The co-adaptation of the halves of the thyroid should be performed in such wise that the cords would be on the same level. He had no recipe to give for such an excellent voice as there was in this case, for he himself had been surprised at the result.

#### HÆMATOMA OF THE RIGHT VOCAL CORD CLOSELY SIMULATING A FIBROMA.

BY SIR FELIX SEMON.

The patient, a gentleman, aged forty-five, was sent by Mr.

Whitehead and Dr. Horsford, of Leeds, on November 6, 1908. He had been hoarse for about six months. On examination a semi-globular smooth red tumour was discovered, rising with a broad surface from the much congested right vocal cord, the movements of which were quite free. The size of the growth was about that of half a split-pea. Two months later it had not altered, and the diagnosis of a fibroid growth seemed from the naked-eye appearances to be thoroughly confirmed. The tumour was removed *in toto* on the first attempt by Mackenzie's forceps, and after removal not only looked again to the naked-eye like an ordinary fibroma, but was also hard and firm to the touch. It was therefore very surprising when the following report was received from Mr. Shattock:

"The lesion is simply a blood-clot: A spheroid clot which lies in the connective tissue, a narrow zone of which separates it from the investing stratified squamous epithelium. No muscular tissue has been removed with it. The clot is everywhere immediately bounded by a zone of connective tissue furnished with flat cells loaded with blood-pigment. There is no trace of any new growth."

The specimen is shown under the microscope. The case is put on record on account of the supposed rarity of blood-clots in this situation. I have already put three other cases of blood-clots simulating benign and malignant new growths in the larynx on record (*Annales des Maladies des Oreilles et du Larynx*, vol. xxv, March, 1889), and I am inclined to believe that if every tumour intra-laryngeally removed were microscopically examined, it would be found that this rarity is more apparent than real. The patient, immediately after removal of the growth, regained his normal voice.

Mr. WESTMACOTT asked if the symptoms had come on suddenly.

Dr. WYATT WINGRAVE strongly supported the exhibitor's remarks on blood-clot formation in the larynx. He himself had collected many instances. The clot was found in two forms: endovascular, in which the coagulum was white; perivascular, which was equivalent to extravasation. He inclined to the belief that many innocent growths in the larynx found an origin in coagula, since they frequently manifested pigmentation, due, not to carbon particles, but to blood-colouring matter.

Dr. JOBSON HORNE said that submucous hæmorrhages of the vocal cords were commoner than people supposed. The two usual causes were influenza and trauma. Given a submucous hæmorrhage a tumour could be developed. Cases had been recorded of rupture of one vocal cord in singers. Varicose veins here might rupture or lead to tumour formation.

Dr. HORSFORD quoted from an article he had recently written two

cases illustrative of the transition of extravasation into tumour. In one of the cases the coagulum was endovascular.

The PRESIDENT asked whether the microscope showed that the tumour had a distinct capsule. Was it an example of hæmorrhage into a tumour?

Mr. SHATTOCK had found no evidence that the hæmorrhage was hæmorrhage into the growth. Indeed, such an occurrence was rare.

Sir FELIX SEMON said that there was no mention of the development of neoplasms from hæmorrhages in any text-book. He recollected one case in which Mr. Butlin opened the larynx supposing the growth to be malignant; in a second case the patient had been sent from Naples to have what was supposed to be an angioma removed. After removal it was seen to be a blood-clot enveloping a papillomatous neoplasm, malignant in character; in a third case a rounded tumour appeared in the anterior commissure, and this also proved to be blood-clot. Regarding the development of the hoarseness, it had been gradual and not sudden in onset.

THE FURTHER HISTORY OF A "CASE FOR DIAGNOSIS. ? CONTINUOUS  
FIBROMA OF NECK AND LARYNX, OR MALIGNANT DISEASE OF THE  
LARYNX, WITH ENLARGEMENTS OF GLANDS IN THE NECK."

BY SIR FELIX SEMON AND MR. WILFRED TROTTER.

(Shown at the meeting of the Section of November 6, 1908, and described in the *Proceedings of the Royal Society of Medicine*, vol. ii, No. 2.)

In this case a tumour had been removed by Sir William Watson Cheyne from the floor of the mouth on the left side, and several enlarged cervical glands on the same side of the neck, in 1900, and microscopic examination had proved the disease to be epitheliomatous. The patient remained free for nearly eight years. In October, 1908, however, huskiness and discomfort in the throat occurred, and the patient was brought by Dr. Daniel on October 19 for consultation. A big, semi-transparent, rounded swelling was found occupying the region of the left arytenoid cartilage and left ary-epiglottic fold (as was shown on the epidiascope), whilst externally a swelling of about the size of a Tangerine orange was felt behind the left sterno-mastoid. (For further description the reader is referred to the *Proceedings*.)

On the day when the patient was brought before the Section, November 6, 1908, a spot of ulceration had made its appearance on the œsophageal aspect of the growth. In the discussion a very doubtful prognosis was given by various speakers as to the chances of a radical operation, an opinion in which Sir William Watson Cheyne had already previously concurred. Nevertheless, the patient decided upon having an exploratory thyrotomy performed,

the result of which was to decide whether radical operation was to be joined to the thyrotomy, or whether the attempt was to be given up. This operation was performed by Mr. Trotter, in the presence of Sir Felix Semon, on November 23, when it was found that the larynx itself was quite free, and that what had appeared to be an intra-laryngeal tumour was in reality a growth springing from the pyriform sinus on the left side, and hanging, with some globular projections, partly into the larynx, partly into the œsophagus. The growth was removed *in toto*, with a zone of healthy tissue around it, and the resulting defect in the anterior lateral and pharyngeal wall was immediately stitched up. The patient made an uninterrupted recovery, but the left vocal cord was now seen to have become fixed in the cadaveric position, either owing to cicatrization near the crico-arytenoid joint, or owing to implication of the left recurrent in scar tissue. Nevertheless, he had already regained a surprisingly good voice.

On December 22, *i.e.* a month after the first operation, the glands on both sides were removed by Mr. Trotter, and were found to be less diseased than had been feared. The patient again made a good recovery, and was now recuperating in Switzerland.

The case taught the important lesson that when there is any possible doubt in such cases an exploratory operation ought certainly to be undertaken. In this case it would have been possible to avoid thyrotomy altogether and to remove the growth by pharyngotomy.

MR. PERMEWAN, having inquired what the steps of the operation were,

Mr. TROTTER replied that the operation was begun as if for laryngectomy and Glück's incision was made, but an exploratory opening of the thyroid showed that the larynx was normal, save for some cedema on the left side. When the finger was passed through the laryngeal opening in an upward direction a hard mass was felt at the upper opening of the larynx, so a transverse incision was made through the thyro-hyoid membrane of the left side into the sinus pyriformis where the tumour was situated. The neoplasm lay in the submucous layer, coming through the mucous membrane at one place as if through a buttonhole, so that when the mucous membrane was incised it shelled out readily. The opening in the pharynx was easily stitched because of the slackness of the tissue in this situation, and no difficulty in swallowing followed, contrasting in this respect with incisions into the oropharynx for removal of the tonsils, etc., where the tissues were tighter, and subsequent contraction caused difficulty in swallowing, especially when much mucous membrane had been removed. The recurrence in this case had taken place in an aberrant lymph nodule which had begun to grow. The tumour he had removed showed little nodules of lymphoid tissue in its substance.

MR. SHATTOCK found two points of interest in the case. Firstly, the tumour recently removed was not a recurrence from auto-inoculation but a metastasis in an aberrant or stray nodule of lymphoid tissue. He supposed there had been an extension of lymphatic tissue outside the sinus of Morgagni—a by no means improbable occurrence, since coronal sections he had cut showed that the sinus of Morgagni and the pyriform sinus were only about one centimetre apart. Secondly, there was the long delay in the appearance of this metastasis. Such a length of time as eight years had not been recorded, although still more extraordinary delay had been recorded in a diffuse melanotic sarcoma of the lip. At the necropsy in this latter case no primary tumour was discovered, but fourteen years previously the eye had been removed by Mr. Nettleship for sarcoma. Although this was the longest period in his knowledge, it was not an isolated case in a sense, since cases had been reported bridging over the gap. Thus Marshall had recorded a case with a recurrence after an interval of nine years. No explanation could be given of the dormancy of cancer-cells for so many years. Perhaps under the stimulus of the early tumour an immunity was acquired, in the presence of which the cells still remaining after operation could not grow, but in process of time this immunity passed off, and the cells were left free to grow.

#### MACROSCOPIC SPECIMEN, MICROSCOPIC SECTION AND MICRO-PHOTOGRAPH OF EPITHELIOMA OF THE UVULA.

By DR. MILLIGAN.

Patent, male, aged sixty-two, had suffered from a "gouty" throat for two or three years. Doubtful history of syphilis forty-five years previously. On examination uvula found to be slightly enlarged and indurated. Posterior surface ulcerated and bled comparatively readily upon being touched with a probe. Ulceration extended for a short distance along the posterior surface of the free margin of the soft palate upon right side. No enlarged glands could be detected. Small portion removed for microscopic examination and pronounced epitheliomatous. Under chloroform a wedge-shaped piece of soft palate with uvula attached removed with a galvanocautery knife. Uninterrupted recovery. Comparatively little effect upon voice.

#### GROWTH IN EPIGLOTTIS FOR DIAGNOSIS. WOMAN, MARRIED, AGED SIXTY.

By MR. KNOWLES RENSHAW.

*History.*—Frequent hæmoptysis for several months. Each hæmoptysis was of small quantity and commenced suddenly without apparent reason and terminated as suddenly.

*Examination.*—On the posterior surface of epiglottis, about a

quarter of an inch from the right upper angle, was a small projection, soft to the touch, the size of a split-pea, having the appearance of a papilloma. Cocaine was applied and the small growth was removed with a pair of StClair Thomson's post-nasal forceps. The growth came away flush with the surface, and there was only slight hæmorrhage for a minute or two. One week later the surface had entirely healed. Three weeks after the time of the removal a small projection was seen in the same position; this was touched on two occasions with chromic acid and destroyed. After another month a small growth similar to the original one, but considerably smaller, made its appearance. There had been no further hæmorrhage, but having in view the possible malignancy of the growth it was decided to remove the affected part of the epiglottis. Under cocaine, with cutting forceps, about a quarter of an inch of the epiglottis was removed, including the growth and a surrounding band of healthy tissue. There was only slight hæmorrhage, and the wound healed rapidly with little discomfort to the patient. The growth was examined by Dr. Arthur Sellers, at the Manchester Public Health Laboratory, who prepared a section and made the following report:

"In microscopical examination the epithelium was found to be raised by a small collection of spindle-cells lying between it and the cartilage, thus forming a small rounded tumour-like projection. This suggests the possibility of a very early sarcoma, but more probably the condition is due to a chronic inflammation arising in connection with a small varix. There is no evidence of tuberculosis. I may add that to the naked eye, at all events, there was no appearance of varix, though the history of the patient rather bears out this view. The age of the patient by no means excludes the possibility of sarcoma, and the rapid dilatation of the blood-vessels and proneness to hæmorrhage which often is characteristic of the growths would account for the symptoms observed."

CASE OF CHRONIC SUPPURATION OF THE FRONTAL SINUS AND ETHMOIDAL CELLS; RADICAL OPERATION BY THE EXHIBITOR'S OSTEO-PLASTIC OPERATION, WITH NO FACIAL DEFORMITY.

By DR. WATSON WILLIAMS.

Miss C——, aged thirty-three, suffering from purulent discharge from the left nasal passage, severe headaches, general adynamic condition, associated with suppuration in the nasal accessory sinuses.

Operation performed under general anæsthesia on November 18, the incision extending along the margin of the left eyebrow. The skin tissue and periosteum having been raised, the frontal sinus was trephined and found full of pus. A longitudinal incision was made, extending from the median extremity of the first horizontal incision down to the middle line of the nose, as far as the tip of the nasal bone. The anterior wall of the frontal sinus having been removed above the initial incision, a second incision was made along the lower and inner margin of the left orbit exposing the lacrimal groove, and the lacrimal duct having been turned out, entrance was made through the base of the lacrimal groove into the nasal passages, and the nasal process of the superior maxillary was divided subcutaneously by a saw passed through the left nasal orifice, and coming out at the opening into the lacrimal groove. A second saw-cut divided the bone from this point upwards subcutaneously. The left nasal bone was then divided by longitudinal saw-cut close to the septum, the osteo-plastic flap thus formed turned upwards, the whole fronto-ethmoidal region being then exposed to view. The floor of the left frontal sinus corresponding to the orbital roof was removed, as well as the corresponding portion of the inner orbital wall, the whole of the pyogenic thickened mucosa of the frontal sinus carefully curetted away, and the fronto-ethmoidal cells, together with the posterior ethmoidal cells, cleared away right back to the sphenoidal sinus. Radical antral operation was also performed on this side, but without curetting the mucous membrane, the antrum, like the frontal sinus, being full of thick pus. The patient was in a very adynamic condition, and it appeared inadvisable to prolong the operation. The whole of the fronto-ethmoidal region being rendered aseptic, a rubber tube was carried through the frontal sinus down to the external nasal orifice, and the osteo-plastic flap having been replaced, complete closure of the incisions was made.

The following day, November 19, there was considerable swelling of the left cheek, and an erysipelatous flush beneath the chin, though the frontal sinus incision had practically united. The third day after the operation the flush was replaced by diffused cellulitis, *angina Ludovici*, beneath the chin, and 20 c.c. of anti-streptococcic serum was injected, and the stitches were removed from the incisions. The discharge from the antrum was very profuse and foul, and consequently it was imperative to syringe the antrum, but so free was the communication with the frontal sinus that it was impossible to prevent infection of the fronto-ethmoidal regions.



November 21.—A culture having been made from the antral pus it was found to be almost pure *Streptococcus pyogenes aureus et albus*, but their infection of the frontal sinus area made it necessary to flush out the sinus with antiseptic solutions (sterilla 1 in 10); a further 20 c.c. of anti-streptococcic serum was administered, and sulphate of quinine, 4 grains, and perchloride of iron given every four hours. The cellulitis had largely disappeared, being concentrated over a circular area of 2 in. diameter, and the patient was in a much more satisfactory condition.

November 22.—The swelling under the chin was incised, pus being evacuated. For the next few days the frontal sinus was flushed with 1 in 20 sterilla and the antrum packed with 1 in 10 sterilla. After that the patient's progress was very favourable, the frontal sinus healing rapidly, though the antrum for some time continued to secrete pus freely. The frontal sinus became completely cicatrised, and the scar is scarcely noticeable, and after a short period will not be visible. This was a particularly virulent streptococcal infection, with reinfection of the whole wound, but despite the fact that the orbital roof and inner wall were removed, the whole sinus area completely healed without any serious trouble. The patient was a nurse in poor circumstances, and in order to avoid the expense of a double operation and prolonged stay in the nursing-home the frontal sinus was done at the same time as the maxillary antrum. As a rule this answered well, but unfortunately it happened to be an unusually virulent infection. The value of anti-streptococcic injections given early was obvious in the marked improvement in the general condition and in localising the cellulitis. Moreover, it was noteworthy that the frontal sinus wound healed almost as rapidly and satisfactorily with flushing after it had become reinfected as in the more fortunate cases where no such procedures are required. The bone and skin-flap united well, and with the exception of the suppuration below the chin the patient recovered with no untoward symptoms whatever, and without any facial defect consequent on the operation.

#### CASE OF THYRO-LINGUAL FISTULA IN A BOY AGED SEVEN.

BY MR. CHICHELE NOURSE.

A swelling the size of a split-pea, covered by epidermis, and containing a milky fluid, existed over the upper edge of the sternum in the middle line. From this a thin cord could be felt

passing upwards under the skin for an inch or more. The skin occasionally gave way, and fluid was discharged.

A microscopic specimen of the secretion was shown.

Dr. WYATT WINGRAVE said the discharge differed from pus, in that it consisted of epithelial cells containing fat granules, like colostrum corpuscles, which stained with osmic acid. The matrix was mucus, and clinically, the thick mucous discharge was sufficient to differentiate cysts of this character from all others. The tubes composing a thyro-lingual fistula were multiple and branching—a feature of significance, since it accounted for the difficulty of curing thyro-lingual fistulae by such means as scraping or cauterising the lining of the main tube. What happened was that the tubular offshoots were not affected by the destroying agent and recurrence took place.

#### CASE OF NEW GROWTH OF THE SEPTUM (WITH SPECIMEN).

BY MR. W. CHICHELE NOURSE.

A girl, aged twenty-two, complained of obstruction of the left nostril. A smooth, red, globular mass arising from the cartilaginous septum closed the left nostril. On the right side the corresponding part of the septum is granular, soft and uneven. The prominent part of the tumour was removed by a snare; on microscopic examination it was found to contain giant-cells.

Dr. WYATT WINGRAVE ventured to call the tumour in this case a tuberculoma, not only because it was composed of giant cells and epithelioid cells, but also because there was the supporting clinical fact of tuberculosis elsewhere in the body. The neoplasm might be compared with that shown by Dr. Pegler at the last meeting, when exception had been taken to the title because tubercle bacilli had not been found in the growth. The speaker thought that the term should still be applied to those granulomata even when tubercle bacilli were not present. No doubt the part played by the giant cells and epithelioid cells was large in pathology; in the tertiary stages of syphilis, in lupus, in leprosy, and in lymphadenoma they occurred. But it was not always possible to have recourse to experimental methods to render the diagnosis certain, consequently he favoured the application of the term, particularly to those cases where the general clinical evidence, taken together with the microscopic appearances, made the diagnosis of tuberculosis probable. Otherwise a large and important class of granulomata would have to go unclassified, although nobody had any real doubt as to their nature.

Dr. JOHNSON HORNE was pleased that Dr. Wingrave had raised the question of the nomenclature of these septal tumours. Neoplasms of the septum composed of giant cell systems should not be classified as tuberculous unless definite proof of their being so was given. And this could only be done by showing the tubercle bacillus in the tissues or by animal experiments. In many of these tumours the speaker had failed to demonstrate tuberculosis by animal experiment. In a note in the last issue of the JOURN. OF LARYNGOL., RHINOL., AND OTOL.,<sup>1</sup> Dr. Pegler had

<sup>1</sup> P. 29.

cited Dr. Lazarus Barlow and Mr. Shattock in support of his position, but both these authorities had fallen into the same error as Dr. Pegler. The speaker had recently conversed with Mr. Shattock on the point, and had obtained from him a concurrence in the attitude which he (the speaker) had taken up, and to which he still adhered.

MR. SHATTOCK said that his attitude towards the question was the same as that of Dr. Horne. Neoplasms presenting giant cell systems were not always tuberculous. Morally, Dr. Pegler's case was one of tuberculosis, but absolute proof was wanting. The speaker had presumed that it was tubercle because no actinomycotic lesion could be found: no mycelium was discovered. Stated as an abstract proposition Dr. Horne's position could not be refuted.

DR. PEGLER said the note in the JOURN. OF LARYNGOL., RHINOL., AND OTOL., to which reference had been made, was written hurriedly. Since the exhibition of the case Dr. Lazarus Barlow had written to say that, humanly speaking, he had no doubt that the tumour was tuberculous. Dr. Horne had stated that there was a risk of tuberculomata being too commonly discovered unless care was taken to ensure a certain diagnosis. But the speaker drew attention to the fact that no single instance had been brought before the Pathological Society during sixteen years, consequently one could not say they were reported frequently.

DR. JOHNSON HORNE referred to a case shown at the Laryngological Society in which cure was reported: but,

DR. PEGLER reminded the Section that this case was one of lupus: and,

DR. STCLAIRE THOMSON said that the case was shown first as a tuberculoma, but that later it was shown as lupus.

#### A CASE OF "MULTIPLE POLYPI" CURED BY CURETTING THE ETHMOIDAL CELLS.

BY DR. LAMBERT LACK.

#### CASE OF HEMIPLEGIA OF THE TONGUE.

BY DR. JOHNSON HORNE.

Previously shown at the Laryngological Society.

DR. DAN MCKENZIE said he had expressed his opinion on the former occasion that the paralysis was functional. He still held the same view.

THE PRESIDENT noted the absence of atrophy of the paralysed half of the tongue and expressed his agreement with Dr. MacKenzie's opinion.

MR. CLAYTON FOX had watched the case for some time. The paralysis was either functional or peripheral in origin. It was not nuclear because no other nuclei were involved, and the absence of other stigmata of hysteria militated against the functional hypothesis. His own opinion was that there was peripheral neuritis of the hypoglossal nerve, of which several cases had been reported.

## A CASE OF SYPHILITIC STENOSIS OF THE LARYNX.

BY MR. HAROLD BARWELL.

The patient, a labourer, aged twenty-four, who contracted syphilis four years ago, and first noticed hoarseness eighteen months ago, was admitted into hospital on June 1, 1908, suffering from severe dyspnœa which had begun five weeks before, and had continued since that time with spasmodic exacerbations. On admission he was rather cyanosed, respiration very distressed with retraction at the supra-sternal notch, and temperature 101.4° F. There was ulceration of the soft palate, both cords were fixed in the mid-line and ulcerated posteriorly, and there was marked arytenoid swelling. Tracheotomy was performed at once under eucaine, and the dyspnœa was relieved. Injections of the benzoate of mercury were employed, and the ulceration healed fairly quickly. He was discharged from hospital on August 5, and went back to work, and has since been taking mercury and potassium iodide by the month. There was very marked stenosis of the larynx, so that on closing the tube air could hardly be forced through, but he managed to articulate so as to be understood by one standing close by.

Opinions were invited on the method of treatment most suitable for this case.

## METAL CAP OF A LEAD PENCIL REMOVED BY LOWER BRONCHOSCOPY FROM A PRIMARY BRANCH OF THE LEFT BRONCHUS (WITH SKIAGRAM).

BY MR. HERBERT TILLEY.

## SAFETY-PIN REMOVED FROM THE ŒSOPHAGUS OF AN INFANT AGED SIX WEEKS.

BY MR. HERBERT TILLEY.

## CASE OF A MAN ONE MONTH AFTER OPERATION FOR MALIGNANT DISEASE OF THE NASO-PHARYNX.

BY MR. STUART-LOW.

## CASE OF A MAN WITH A SINGULARLY SYMMETRICAL SYPHILITIC SEPTUM.

BY MR. STUART-LOW.

Mr. PERMEWAN asked Mr. Stuart-Low whether there were not some glands low down in the neck, in the first case.

Mr. STUART-LOW was not sure. The swelling present had appeared immediately after operation.

#### A MODIFICATION OF THE POSTERIOR RHINOSCOPIC MIRROR.

By Dr. DAN MCKENZIE.

This consisted in the substitution of a slightly convex mirror for the usual plane mirror, by which the field of reflection was rendered more extensive, although, of course, smaller.

#### MALE, AGED THIRTY-EIGHT. CRESCENTIC WEB OCCLUDING THE ANTERIOR HALF OF THE LUMEN OF THE LARYNX.

By Dr. WILLIAM HILL.

It was proposed to operate through a thyro-fissure and prevent reunion by means of the exhibitor's laryngeal splint, which was successfully employed in a case shown last November.

Mr. HAROLD BARWELL thought that the description of the case was not quite accurate. He could not see a web, but there was swelling extending from the ventricular bands down to the subglottic region, and this swelling was succulent and not cicatricial. Consequently, the case was not suited for thyro-fissure. He advised that anti-syphilitic treatment should be continued and Schrötter's bougies employed later.

Mr. CLAYTON FOX had experienced considerable difficulty in finding the cords at all. The ventricular bands were red and swollen, but below them a web could be seen, thin, and like the congenital web. The laryngitis present might either be simple or specific. In any case splitting up the web and passing O'Dwyer's tubes would be less risky than thyro-fissure, and less likely to be followed by voice troubles.

The PRESIDENT thought the appearance suggestive of tuberculosis, but the history was one of syphilis.

Dr. WESTMACOTT thought that chronic catarrh of the larynx would account for all the appearances in the case.

Mr. SCANES SPICER said there had been deep ulceration on the palate, and the presence of syphilis was indubitable. Dr. Hill had examined the larynx by the direct method, and doubtless had thus been able to see the web, which had escaped detection by the ordinary method of examination.

#### A CASE OF EPITHELIOMA OF THE UVULA AND PALATE COMPLETELY EXCISED BY MEANS OF PAQUELIN'S CAUTERY-KNIFE.

By Dr. DUNDAS GRANT.

There was no recurrence. The operation had been done about four months ago. Speech and drinking were quite good.

## A CYST OF THE ANTRUM.

BY MR. FITZGERALD POWELL.

This distended both the inner and the outer aspects of the alveolus.

MR. FITZGERALD POWELL said the antrum was clear on transillumination. The tumour was probably a dental cyst situated in the antrum. He purposed performing the radical antrum operation and draining through the nose.

## FOREIGN BODIES REMOVED THROUGH THE BRONCHOSCOPE.

BY DR. LAMBERT LACK.

## A MALE WITH VASO-MOTOR DILATATIONS ON THE RIGHT HALF OF THE PALATE AND TONGUE.

BY SIR FELIX SEMON.

THE PRESIDENT asked if there was a tendency to bruising, and whether the coagulability of the blood was diminished. In this case he suggested the administration of calcium salts.

## A LARGE HARD TUMOUR OF PALATE AND TONSILS.

BY DR. H. DAVIS.

Opinions were asked as to whether the tumour could be readily shelled out. The growth had not been punctured because of the risk of fungation had it proved to be malignant.

THE PRESIDENT thought removal should be attempted.

MR. FURNISS POTTER advised simple enucleation. If the tumour proved innocent, no other treatment would be required.

## A CASE OF DYSPHAGIA WITH ATTACKS OF SYNCOPE AND VERTIGO AFTER COUGHING.

BY DR. JOHNSON HORNE.

THE PRESIDENT considered the description as answering to laryngeal syncope or laryngeal vertigo.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL  
SECTION.*Meeting on February 6, 1909.**President, DR. PETER McBRIDE, in the Chair.**Abstract report by DR. DAN McKENZIE.*

Cases and specimens were shown.

## DERMOID OF MASTOID REGION.

BY DR. P. McBRIDE.

Miss L——, aged twenty-one, dark hair and eyes.

Complained of a swelling behind the right ear. On examination the right auricle was seen to stand out to an unusual extent. On inspecting the back of the ear a swelling was noted occupying the angle between the upper part of the auricle and the base of the mastoid. The eye was at once attracted by its bluish colour, and it looked exactly like a very large vein. On palpation it was felt to be about as large as a big hazel nut. It was freely movable and not adherent to the skin, which could be pinched up all over the the tumour, and fluctuating. It felt as if its size could be influenced by pressure, but it could not be dissipated entirely. I may say at once that this must have been an error resulting from its very free mobility. I had little doubt the growth was an angioma, and therefore removed it very carefully, raising a flap of skin. The bluish colour was then even more marked and reminded me of an exposed lateral sinus. At the angle between the mastoid and auricle a vein of some size entered the growth. This was ligatured. After the stitches had been tied considerable bleeding occurred from another vessel in the upper and anterior part of the wound. The stitches were removed and the bleeding stopped by passing a stitch of silkworm gut under the vessel and making it also connect the corresponding edges of the incision. The growth, which still retained its bluish colour, was placed in formalin. On cutting into it I was surprised to find the fluid contents to consist of a yellowish, syrupy, semi-fluid substance containing numerous hairs.

The mother told me the growth had been noticed like a small "vein" from early childhood, but that recently it had begun to grow bigger and push forward the ear.

There were no symptoms complained of.

Microscopic examination showed epithelium and hairs, but the latter were not particularly dark in colour. No pigment was seen, but the eyeballs were excessively vascular, and to this we must probably attribute the dark colour.

#### DERMOID CYST WITH FISTULA UNDER THE RIGHT LOBULE.

BY MR. MACLEOD YEARSLEY.

The patient, aged twenty-four, was first seen June 15, 1907. Scarlet fever fifteen years before; deafness and discharge right ear; large inferior perforation right membrana tympani. Discharge moderate.

Under the right lobule was a sinus discharging a thin fluid, with granulations at the orifice. The patient said this discharge was intermittent, and when it ceased a lump appeared under the ear.

On October 3, 1907, the sinus was followed up and the dermoid cyst dissected out.

Dr. MILLIGAN remarked that dermoids in this situation were very rare. Retention cysts were commoner. These tumours should be examined by transmitted light, and if dermoids they would be found to present a little dark mass in the centre of the tumour. Examined microscopically this was seen to consist of concentrically arranged masses of inclusion-cells. Another diagnostic point of importance was the free movement of skin over the tumour. He had shown a case at this Society in which a cyst, originally a dermoid, had undergone malignant degeneration. The patient was a girl, aged twenty.

Mr. LAW asked if these cysts were common.

Mr. CUMBERBATCH had never seen true dermoids in this situation.

Dr. PRITCHARD said dermoids over the mastoid were rare, although they were generally mentioned in books, probably because the cases were copied from book to book and not actually seen by writers.

Mr. MARTINEAU recalled a case operated on by Mr. Makins. The cyst was easily dissected out and contained fine colourless hairs. The wall was thick and white.

Mr. CHEATLE had dissected out cysts in this situation which were called dermoids, although they contained no hairs. He had also seen a granulation coming through Shrapnell's membrane with fine hairs on it.

Mr. MACLEOD YEARSLEY suggested that this granulation was a hairy polypus, and

Mr. CHEATLE agreed.

The PRESIDENT had found only seven or eight cases reported in the otological literature, but in the general literature, in Parkes' "Surgery," for example, dermoids were described as if they were common in this situation. Dermoids over the mastoid contained soft hair.

Mr. CHEATLE said that before a cyst could be termed a dermoid, hair-bulbs had to be shown on the cyst-wall.



Mr. JENKINS described the origin of dermoids in the neighbourhood of the ear. Those over the mastoid were usually suture cysts. Dermoids of the pinna arising from the first branchial were particularly rare, because of the embryonic formation. Granulations with hair on them represented a step towards the formation of a dermoid.

Mr. FAGGE said there was no difficulty in distinguishing between sebaceous cysts and dermoids. In the former the lining epithelium occurred in scanty layers; in the latter the epithelium was tessellated and keratinoid. The presence or absence of hairs was of no importance for diagnosis, provided that the epithelium was definitely stratified.

Dr. MILLIGAN said that in a dermoid the lining cells were non-nucleated, acid-fast squames; in retention cysts they were nucleated.

#### A NOTE ON THE POSITION OF THE PATIENT AFTER OPERATIONS ON THE MASTOID.

BY DR. DAN MCKENZIE.

It recently occurred to the speaker that after the mastoid operation drainage of the large tympano-antro-mastoid space laid open to the external meatus by the operation could be improved by making the patient lie continually upon the affected side rather than by leaving him to choose his own attitude. When left to himself he naturally adopted the most comfortable position, and, refraining from lying on the affected ear, placed himself on his back, or, more frequently, on the opposite side, so as to avoid any pressure on the wound. In these positions it was obvious that the cavity formed of the mastoid excavation and the external meatus could drain but imperfectly, while on the other hand, if the patient could be kept lying with the affected ear directed downwards efficient drainage would be perfectly and easily secured.

Endeavours to induce patients to maintain this attitude when lying on an ordinary pillow, or upon a circular air-cushion, having proved vain, a pillow was made with a perforation through it, sufficiently spacious to receive the ear and mastoid region without exercising any pressure on the tender parts. On this pillow the patient could lie quite comfortably with the ear downwards, and could be kept in this position as long as he was in bed.

The immediate consequences of placing the patient in this position were that the dressings which drained the meatus became more rapidly soaked with serous discharge than when he lay on the back or on the opposite side, a circumstance which, of itself, seemed to suggest that this was the proper attitude.

It was clear that if the homo-lateral position was an advantage after mastoid operations it should also be insisted upon after all

operations on the ear, lateral sinus, brain, etc., in which drainage is a matter of importance.

Probably the propriety of maintaining the homo-lateral position after mastoid operations had already occurred to many surgeons, but the speaker was unable to find any allusion to it in the literature.

(The "mastoid pillow" was exhibited.)

MR. W. STUART-LOW thought the mastoid pillow an excellent idea, and favoured the all-important drainage. He used a wire cage to retain the mastoid dressings and would combine it with the pillow for forty-eight hours. He held that retention of the dressing by a bandage caused narrowing of the meatus. The rubber edge of the cage acted like a Bier's band. As a consequence he was able to remove his sutures in forty-eight hours, and to discharge his patient from hospital in a week. He employed horse-serum for washing out the wound after operation, and found that it induced a copious outpouring of lymph, and so a natural process of flushing.

MR. HUNTER TOD thought the mastoid pillow would add very much to the patient's comfort, but he did not think there was any need for it as an aseptic measure.

DR. MILLIGAN asked what the exhibitor's after-treatment was. Did he employ packing?

DR. DAN MCKENZIE, in reply, said he had had no intention of advocating any particular method of after-treatment, since he had no fixity of practice. But he never employed packing. He looked upon the homo-lateral position as a rational means of maintaining the purity of the large bony cavity left after operation. Drainage being favoured, stale serum was not permitted to remain in contact with the unprotected tissues. He anticipated considerable benefit from the adoption of the position.

#### A CASE OF CHRONIC MIDDLE-EAR SUPPURATION, WITH CARIES OF THE ANTERIOR MEATAL WALL AND ZYGOMA; HISTORY OF LOCAL INJURY AND SYPHILIS.

By MR. ARTHUR CHEATLE.

A man, aged forty-four; deafness in and discharge from the left ear since boyhood, cause unknown; syphilis at eighteen years of age. Seventeen weeks before coming to the hospital he had pushed a piece of wood into the ear to allay irritation, without any pain or bleeding. One week later great pain, having its focus immediately above and in front of the ear, and shooting backwards and forwards, came on with a tender swelling, which has increased in size. On examination a firm, exquisitely tender, non-fluctuating swelling was found immediately in front of the tragus, and swelling of the anterior meatal wall, obstructing the view of the deeper parts; the meatus was filled with very offensive discharge: there

were no mastoid signs. The parotid swelling increased in size in spite of fomentations, syringing, and anti-syphilitic treatment. At the operation the usual dense condition of the outer antral wall was found, with a small antrum which contained granulation and pus.

The anterior meatal wall was entirely carious, the caries extending on to the zygomatic process. There were no cells leading from the middle-ear tract to the zygoma. Several operations had to be performed on superficial extending caries of the zygomatic process. Healing at last occurred under anti-syphilitic treatment and the removal of small flakes of bone through a sinus. A plastic operation was necessary to remedy deformity. In his opinion the caries of the meatal wall and of the zygoma was entirely separate from the chronic middle-ear suppuration; perhaps a local wound by the wood became infected by the middle-ear discharge, causing osteitis. The anti-syphilitic treatment after the operation was probably of no real benefit.

Mr. BRONNER suggested that the injury determined a local outbreak of syphilis, just as an injury to the eye in a syphilitic patient caused choroiditis. This aspect of the case was important from the medico-legal standpoint.

Mr. STUART-LOW asked how compensation would be awarded in such a case. He had seen a case where a blow on the nose in a syphilitic patient had set up an inflamed condition which might be ascribed either to the trauma or to the syphilis. In the case under discussion he thought that one extensive rather than several small operations should have been performed.

Mr. WESTMACOTT said that, according to the Employers' Liability Act, if a person the subject of disease sustained an injury which was rendered worse by that disease, compensation would be awarded to the employee, since the onus was on the employer for employing an unhealthy workman.

Mr. CHEATLE said he could not confirm that opinion as he was not an expert on the Act.

#### GIRL, AGED TEN, WITH WHITE DEPOSIT IN BOTH EXTERNAL AUDITORY MEATUSES.

BY DR. W. H. KELSON.

Shown at the last meeting. Subsequent history of the case: A few days after the meeting the patient was examined under an anæsthetic, and the membrana tympani on each side was found to be intact. Cultures showed the presence of *Staphylococcus aureus*, but the Klebs-Loeffler bacillus could not be found, nor did smears show presence of any mycelium. The ears were treated with

glycerine of carbolic acid, and the patient discharged well in ten days.

The PRESIDENT remarked that the case was one of pure otitis externa with membranous formation, an interesting and uncommon event.

Dr. NELSON, in reply to Mr. West, said no diphtheroid bacilli were found.

#### LANTERN SLIDES SHOWING HAIR CELLS IN THE ORGAN OF CORTI (HUMAN).

BY MR. SYDNEY SCOTT.

Dr. PRITCHARD congratulated the Section on the opportunity Mr. Scott had afforded it to view his beautiful sections. He had observed that the hairs projecting from the hair-cells went with the spiral, whereas in the text-books they were always described as going against the spiral. He did not understand whether Mr. Scott had found more than three rows of hair-cells in the human organ of Corti. The speaker, in examinations of the lower animals, had found support for the statement that the rows increased from three to five on going up the spiral. He had found this to be the case in monkeys. Mr. Scott's specimens had shown the nerve-filament traversing the tunnel of Corti. This also he had frequently seen in sections obtained from the lower animals.

Dr. MILLIGAN offered his sincere congratulations to Mr. Scott. He asked how long after death the temporal bone was removed.

The PRESIDENT alluded to a paper by Shambaugh, of Chicago, in which the statement had been made that the basilar membrane increased in length as we pass to the apex. This author held that it was the membrana tectoria which vibrated. He asked Mr. Scott whether he had heard of this new theory.

Dr. PRITCHARD said that the membrana tectoria was merely a mucoid layer, striated no doubt, but without any real structure.

The PRESIDENT, on the other hand, held that it showed a characteristic structure.

Dr. PRITCHARD, referring to the theory that the appreciation of pitch was dependent on the vibration of the membrana basilaris, said that in birds an extensive portion of the upper end of the organ of Corti was totally devoid of membrana basilaris.

Mr. S. SCOTT, in reply, said he did not know whether the rows of hair-cells increased as we passed up the spiral. In his sections he regarded three as the typical number, since if the sections were not quite radial more rows were shown. The more perfect the technique the fewer were the rows. The nerve-fibrils in the tunnel of Corti were more easily obtained in animals than in man. Professor Schäfer, to whom he had shown his specimens, had not previously seen them in human sections. Regarding the arrangement of the hairs in the hair-cells the speaker drew attention to the difference shown by his sections from what was depicted in the text-books. In the books the hairs were represented as emerging from the cell in a row, whereas his sections showed that they clustered together at the orifice of the cell and spread out, fan-wise, some little distance above the cell. [The cell with its bunch of hairs looked exactly like a flower-vase with a bunch of grasses projecting from it.—D.M.] The hairs were surrounded by a "collar" close to the upper end

of the cell. He had not gone into the question of the membrana tectoria. In all his specimens it extended as far as the outer hair-cells. Another argument against the supposition that it was mucoid lay in the fact that it always presented the same shape. Its striations, besides, were vertical, uniform, and close. Probably it possessed a definite structure. It was important to remove the temporal bones as soon after death as possible. Two hours or less was recommended. But this was not essential, since he had obtained quite good specimens as long as thirty hours *post-mortem*.

#### CASES AND SPECIMENS ILLUSTRATING MALIGNANT DISEASE OF EXTERNAL AUDITORY MEATUS AND MIDDLE EAR.

BY MR. C. E. WEST.

The eight cases reported had been met with in the last eight years. Seven were carcinomata and one sarcoma. The carcinomata were all in males. Three were over sixty years; one was twenty-two years, and one, an advanced case, twenty-seven years.

Pain was the outstanding symptom. It was deep-seated and severe, and sometimes extended along the course of the auriculo-temporal nerve. At the time of operation discharge was present in all, but in three of the seven the discharge had appeared a long time after the onset of the pain. The discharge was doubtless due to ulceration, and the pain to infiltration of the tympanic plate.

The sarcoma was of seven months' duration.

Pathologically, three of the carcinomata were papillomatous and ulcerated; in two there was polypoid inflammation. In one a reddish-blue ridge was seen in the external meatus, and behind the ridge probing revealed the presence of erosion.

In two the meatus was the primary seat of the disease, and in all the disease was more advanced in the meatus than in the deeper parts. In three sequestra formed on the floor of the tympanic plate.

The lymphatic glands affected were, first the pre-auricular, and then the deep cervical chain.

In one case the dura mater and brain were exposed.

For the cure of the disease the cartilaginous meatus with the pre-auricular glands and parotid fascia were removed. The bony parts were removed when necessary, even as far as the styloid process, the rule being to follow up the disease wherever it went. In one case the facial nerve was exposed and dissected up.

The auricle was displaced down and retained in warm clothes wrung out of saline during the operation. The wound was closed and skin-grafting employed when necessary.

*Results.*—One died, unoperated on, of sepsis of the brain. In one patient, an old man, although recurrence took place, life was prolonged.

In four there had been no recurrence. One of these had two years of pain before operation.

The cases were more common than appeared from the books, and the speaker held that many cases were overlooked, the case being catalogued as carcinoma of the parotid, acute encephalitis, or malignant disease of the glands of the neck. If carcinoma of the meatus were looked for regularly it would be found more frequently.

Dr. DUNDAS GRANT said that what had struck him most in the cases which had come under his notice was the extent of the area of exposed bone in the meatus. The epitheliomatous tissue was most inconspicuous, and looked like simple granulations. When with this appearance there were severe shooting pain and extensive exposure of bone he at once suspected malignant disease and had the granulations examined microscopically. With early diagnosis a bold surgical treatment ought to give a measure of success, as shown by Mr. West's results.

Mr. S. SCOTT, referring to the pathological evidence, intimated that it was important to obtain sections of the growth in all cases. Mr. West's plan of immediate examination at the time of operation was adopted. The growths were cut in paraffin, and the speaker had seen all the specimens.

The PRESIDENT thought that Mr. West's experience of so many cases in such a brief time was exceptional. During twenty years in the Edinburgh Royal Infirmary and in his private practice he had only suspected three cases of malignancy, and had only seen one in the external meatus. He had seen it with chronic purulent discharge with granulations. In the least common form a small painful point existed in the ear, and the continuance of the pain led to an examination of the external meatus. He thought Mr. West had accidentally encountered a series of rare cases.

Mr. WEST, in reply, thanked the speakers. The series was certainly remarkable, but the cases had been looked for carefully. He was sure that many cases of this disease were missed until the disease appeared in the mastoid region. He recollected a case he had seen when house-surgeon of carcinomatous glands in the neck, where a search failed to reveal the primary growth. But the ear had not been examined.

#### NOTES OF A CASE OF CHRONIC OSTEO-MYELITIS OF THE SKULL, THE RESULT OF MASTOID DISEASE (WITH SPECIMEN OF CALVARIUM).

By Mr. HUNTER TOD.

The patient, a woman, aged fifty-three, was admitted to the London Hospital on April 22, 1908, suffering from a purulent discharge from the right ear, which had existed for two years. For two months previous to admission there had been constant

pain behind the ear, accompanied by headache and pain in the eye. There was an obvious abscess over the mastoid process. The left ear was normal.

On performing the mastoid operation on the right side a large quantity of pus was found beneath the periosteum, and the bone above and behind the mastoid process was necrosed over an area the size of the palm of the hand. Its removal caused extensive exposure of the lateral sinus and also of the lower portion of the temporo-sphenoidal lobe and cerebellum. The dura mater was thickened and covered with granulations. There was also extensive necrosis of the posterior wall of the auditory canal. The wound was left open and packed posteriorly. After operation there was complete relief from the head symptoms, and the temperature remained normal throughout. The patient was dismissed to the out-patient department after three weeks, with an apparently healthy granulating wound.

After two months the headaches returned. Meanwhile the wound only partially healed, and from its upper posterior margin a further piece of necrosed bone was removed. In October, 1908, the patient was re-admitted to the hospital owing to a puffy swelling over the parietal region on the affected side, which was extremely tender on palpation. An incision was made over this part, and the bone found to be carious. From this date onwards the headaches continued, and there appeared to be a spreading cellulitis over the whole of the skull requiring multiple incisions. The patient was transferred to my care in December, 1908. On the right side (the ear originally affected) there were no active symptoms of disease. There was, however, considerable discharge from the left ear, but no swelling nor tenderness over the mastoid region. There was extreme deafness. The patient complained continually of gnawing pain in the head. Paralysis of the left facial nerve had existed for ten days. The temperature was only occasionally raised above normal; pulse 76 and regular.

There were slight attacks of vomiting at irregular intervals. The diagnosis was that of chronic osteo-myelitis, and it was presumed that the left ear had become infected by direct extension through the bone from the opposite side. Although the prognosis seemed hopeless, I intended to operate on the left side, hoping to relieve the head symptoms, but before this could be done the patient suddenly collapsed and died.

*Post-mortem Report.*—Fairly well nourished. "Scar behind right ear. Sinuses in scalp on each parietal eminence leading to

bare bone. Scalp is very thick and cedematous and strongly adherent to skull all over. On stripping off the pericranium the skull bones are seen to be irregularly worm-eaten; the sunken dark red sinuous areas do not extend quite through the outer table, but in the region of the left external fontanelle is a considerable depression extending almost through the skull. At the anterior fontanelle the bone is very thin. At the posterior angle of the right parietal there is a deep depression, in the floor of which is no bone, but only periosteum and dura mater fused together. Similar but less depressions are to be seen above and behind the right mastoid, which is practically separated from the skull. On removing the skull-cap the dura is seen to be adherent to the bone and to the periosteum at those spots where the osseous tissue is completely absent. There is no excess of cerebro-spinal fluid beneath the membrane. Beneath the tentorium covering the whole posterior fossa and base of brain is thick green pus, which also fills the left internal meatus and extends down into the spinal sheath. The bone of the tegmen tympani is red, soft, and granular. Both middle ears contain soft, cheesy matter. On splitting the left internal ear no pus is found in the vestibule, but the superior semi-circular canal is lost in a large cavity filled with granulation tissue. Both lateral ventricles of the brain are considerably dilated and filled with clear fluid, but the brain substance itself is pale and firm and contains no abscess."

The PRESIDENT had never seen osteomyelitis of the skull follow mastoid disease, although he had seen it as a result of frontal sinusitis.

Dr. PRITCHARD also had never met with a case.

Mr. WEST had mentioned a case at the last meeting of the Section. After the radical mastoid operation a swelling appeared which gradually spread all over the calvarium. The swelling finally suppurated, and the patient died nine months after the operation. The peritoneum was thick and white. A glairy, purulent fluid was discharged, from which nothing but a streptothrix could be grown. He suggested that there was something peculiar about this spreading osteomyelitis of the skull.

Dr. DONEGAN said that osteomyelitis of the skull was very rare. In crania which approximated in character to those of elephants, in which the sinuses extended all over the skull and the diploë was cellular, an extensive suppuration occurred.

Mr. S. SCOTT, referring to the *post-mortem*, asked what had been the actual cause of death. The internal auditory meatus, he noticed, contained granulations and pus. Earlier in the history of the case the left ear was described as normal. Had the middle ear become infected while under Mr. TOD's care, and had infection of the internal ear followed infection of the meninges?

Mr. HUNTER TOD, in reply, regretted that the earlier notes on the case were incomplete. He had not seen the patient until near the end. The patient had been under a general surgeon at the start, and simple incision



had been deemed sufficient. The bone had not been exposed thoroughly. The disease had spread over from right to left. One ear was affected first and the other later. The left ear had become infected through the bone. There was no temperature, but intense pain in the mastoid was experienced. The immediate cause of death was meningitis consequent upon suppuration of the internal ear.

## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

*Fourteenth Annual Meeting, held at Pittsburg, Pa., May 28, 29, and 30, 1908.*

DR. EWING W. DAY, *President, in the Chair.*

*(Continued from page 101.)*

### SYMPOSIUM ON THE COSMETIC AND PLASTIC SURGERY OF THE NOSE, THROAT AND EAR.

Professor JANSEN, in discussing Dr. Goldstein's paper, said: With the large persistent post-auricular fistulæ there is often combined a narrowing of the introitus of the external auditory canal. With Goldstein's method of closure of these fistulæ the canal remains unchanged. Furthermore, the method does not seem to promise success in the cases of very large fistulæ. For the past thirteen years I have been using a method, not hitherto published by me, which enables me to close the largest fistulæ, at the same time widening the canal. I make a circular incision some distance from the edges of the fistula about its upper, posterior, and lower margins down to the bone. The skin is dissected toward the opening for a distance of  $\frac{3}{4}$  to 1 cm., so that the edges of the skin may be reflected inward. By means of a vertical incision in front of the the opening, the skin is dissected up from the posterior surface of the concha, also for a distance of  $\frac{3}{4}$  to 1 cm. A Körner flap is now made in the usual way from the remainder of the posterior canal wall and a portion of the concha. This flap is reflected backward between the reflected edges of skin, which were dissected up from about the upper, posterior, and lower margins of the fistula and sutured. In this way the fistula is closed in by a flap, which is epidermatised on its inner surface and raw on its outer surface. Over this area the broadly mobilised posterior and anterior wound

edges are drawn and sutured to each other and to the underlying tissues.

Dr. WENDELL C. PHILLIPS, of New York City, referring to plastic surgery for the correction of hare-lip and cleft palate, believed that Brophy's operation in infants offers the best hope of success. He had been watching Brophy's work and had seen a large number of his operations, and the point which impressed him most forcibly was the fact that in cleft palate there was no real loss of tissue. Another point which impressed him was that Brophy's early operation, being so nearly bloodless, obviates the danger which attends nearly all operations for cleft palate, viz. hæmorrhage and consequent shock.

Dr. GEORGE L. RICHARDS, of Fall River, Mass., described a method, which he had found very satisfactory, for operating upon crushed-in nose resulting from traumatism. Not uncommonly, such cases were treated by putting on adhesive plaster, which made the condition worse, and finally, when the crushed-in bone was firmly fixed, the patient would come to the rhinologist for operation.

Dr. HERBERT E. SMYTH, of Bridgeport, Conn., said that upon reading Dr. Brophy's description of his infant operation, he had received the impression that the approximation of the edges of the cleft was comparatively easy, especially after incising the malar processes.

Dr. Smyth unfortunately had had but one case suitable for this operation, an infant, aged three weeks, with a remarkably wide cleft.

He had had no difficulty in following the details of the operation as laid down by Dr. Brophy, but had found it impossible to approximate the edges of the hard palate, even after very free incisions in the malar processes.

Dr. WILLIAM WESLEY CARTER, of New York City, presented the following apparatus as intended to fill a long-felt want, namely, that of a *splint* that would hold the nasal tissues in their proper position until union had occurred after fracture, both accidental and operative. It was especially adapted for the prevention and cure of depression of the bridge, but it was also to be used whenever a broken nose needed to be held in normal position until union took place.

The instrument consisted of a bridge made of steel and as light as is compatible with strength. The bridge was formed by two curved, fenestrated wings  $2\frac{1}{2}$  cm. wide, and joined by a hinge.

The distance that these wings could be separated was regulated by a thumb-screw. The edges of the wings diverged to correspond to the shape of the nose; they were padded with rubber, and near the margins were small holes that permitted of gauze padding being stitched on.

The second part of the apparatus consisted of two narrow hard-rubber splints, perforated by four small holes.

Assuming that the nasal tissues had been thoroughly mobilised, the application of the apparatus was as follows:

No. 11 iron-dyed silk was threaded through one of the holes in the small intra-nasal splint and knotted (the hole was selected according to the distribution of lifting force desired), the other end was threaded into a large curved needle; this was passed from within the nose through the cartilaginous dorsum near its attachment to the nasal bones and close to the septum. The roof of the nose was very thin and easily perforated. The splint was now drawn into the nose and properly adjusted to the dorsum.

This process was repeated on the other side. The bridge was then fitted over the nose and the distance between the wings so adjusted by means of the thumb-screw as to give the proper support to the base of the nasal triangle. The sutures were now passed through the fenestræ of the bridge vertically above their exit from the nose and drawn tight enough to lift the dorsum into its proper position and reduce the deformity. The sutures were then tied together over the hinge of the bridge. There should only be sufficient tension to support the parts. The apparatus was automatically held in place, and there was no tendency to displacement. The splint should be worn from ten days to two weeks, and the patient should be confined to bed during this time.

In uncomplicated fractures of the nose there was fixation in eight days, and bony union in a fortnight.

The mechanics of this apparatus might be illustrated diagrammatically. The line vertical of the base of the nasal triangle (*a*) represented the downward pressure of the bridge produced by the tension of the sutures on the dorsum. The horizontal line (*b*) represented the pressure exerted horizontally by the wings and controlled by the thumb-screw. The mean direction of the pressure (*c*), therefore, that is actually applied to the base of the nasal triangle bisects the angle formed by the vertical and horizontal lines, and gives us the proper support at the base, while the lifting force is applied to the apex through the sutures attached to the intra-nasal splints.

The combined action of these forces therefore would tend to construct a symmetrical nose.

In nearly all cases of flat nose the septum was too short to admit of raising the bridge. To overcome this difficulty he had devised the following operation for lengthening it without leaving a perforation.

Through a button-hole split he elevated the mucous membrane on one side of the septum. With a sharp-pointed bistoury introduced into this sub-perichondrial pouch he divided, beginning at the anterior edge of the vertical plate of the ethmoid, the cartilage and mucous membrane of the other side at a high level. (a) He then divided the mucous membrane of the remaining side at a much lower level, (b) thus leaving a long flap of mucous membrane attached to the upper segment of the septum; when the latter was reached this flap fell into the interval and prevented a perforation. The fore part of the septum was lengthened in the following manner: Downward from the septum an inverted Y-shaped incision was made, separating the columnar cartilages, and continued under the floor of either nostril, making two flaps which were brought together in the median line and sutured with fine silk, thus lengthening the septum and raising the tip of the nose. The incision in the floor of either nostril was then extended under the alæ, liberating them from the underlying tissue, so that they could be brought toward the median line and sutured, thus narrowing the nostril and producing a shapely nasal orifice.

The combined bridge and intra-nasal splint had the advantage of restoring the function as well as the contour of the nose by a rearrangement of its parts and without the introduction of foreign substances into its tissues. A combination of its lines of force would tend to construct a normal nasal arch; it reversed the action of the forces that produced the deformity.

[*Note*.—Since the above presentation Dr. Carter's attention has been called to a mask devised by Dr. O. B. Douglas, and which at a glance would seem similar to his instrument. It differed, however, considerably in mechanical construction and application from his, Dr. Carter's being adjustable and giving support to the base of the nasal triangle, a most important consideration.]

Dr. WILLIS S. ANDERSON, of Detroit, Mich., was of the opinion that photographs of noses before and after operation did not always show the condition accurately, and in this connection called attention to the value of plaster casts in this class of work. The use of paraffin in the correction of depressions of the nose had the dis-

advantage that when the hollow was filled in by the paraffin the nose was broader than normal. Paraffin should be employed only in cases which could not be corrected by plastic work inside the nose.

Dr. ROBERT C. MYLES, of New York City, called attention to the value of the complete submucous operation involving the cartilage and the perpendicular plate of the ethmoid for the correction of flat, depressed noses resulting from severe traumatism. He had seen a number of cases where the nose had straightened up of itself after removal of the cartilage. By the use of a little paraffin and by a certain amount of twisting and turning he had been able to get some remarkable results with plastic work.

Dr. S. J. KOPETZKY, of New York City, reported the case and presented photographs of a prize-fighter who, after a blow on the ear during a bout, had an infection of the cartilage of the external ear. The case came under observation at the Manhattan Eye and Ear Hospital, New York, and an incision was made in front, evacuating the pus collected underneath the skin. For about three months the cartilage continued to suppurate, in spite of all attempts to stop it, until finally a great part of it had sloughed away, leaving a loose bag of skin which dropped forward, making a typical "dog ear." The subject was finally subjected to operation with the view to remedying the cosmetic effects. Numerous small elliptical pieces of skin were taken from the anterior side in order to attempt to reproduce the folds of the ear. From behind a tongue-shaped skin flap was cut and placed upon the denuded portion of the skull just behind the ear. Suturing the tongue into place held the remains of the concha in position. During the operation some more of the cartilage of the concha was resected. The photographs showed the condition before and after operation.

Dr. W. W. CARTER, of New York City, said Dr. Anderson had called attention to an important matter in regard to deformities of the nose. When the nose was broad and flat it was absolutely unfitted to the injection of paraffin. The method which he had described for raising the bridge of the nose would seem better suited to this class of cases. Where the nose was very broad a portion of the nasal process of the superior maxilla would be clipped off with a chisel and used in building up the arch.

Dr. BECK, in closing the discussion, agreed with Dr. Anderson concerning the value of casts, many of which he had made. He took issue with Dr. Smith concerning the use of semi-solid paraffin, which would be absorbed to a great extent. He preferred Eckstein's

method of injecting liquid paraffin, which would not be absorbed. He had employed paraffin injections in seventy-three cases. Dr. Ballinger's suggestion with reference to straightening the nose by the intra-nasal incision of the cartilage was entirely new. Semm had long ago excised the cartilage from the outside. The method described by Dr. Richards was not new, Roe and others having operated in this manner. Dr. Carter's method was excellent and he would try it with the next suitable case.

Dr. ROE, in closing the discussion, said that for taking off superfluous bone by his subcutaneous method he had found the use of the saw far better than the chisel, as it is less liable to disturb the nasal bones and leaves a much smoother surface. This would especially hold true in the use of the curved chisel with the edge cutting forward, as proposed by Dr. Ballenger, for if the bones were not fixed firmly in position there would be more danger of displacing them with the chisel cutting forward than with the ordinary chisel cutting backward. In regard to shortening the nose by the V-shaped incision, Dr. Roe thought it far better to make the incision at the point of the greatest redundancy than high up near the centre of the nose, as proposed by Dr. Ballenger. The success of all these subcutaneous operations for the correction of nasal deformities depended largely or almost entirely upon the judgment and experience of the operator as to where and how the incision should be made and the manner in which the work should be done. As cases vary so much in every particular no prescribed rule could be followed, for the reason that the method which is suitable in one case is entirely out of the question in another case.

Regarding the methods described by Dr. Richards and Dr. Carter for correcting flattened or depressed noses by forcibly raising the centre, Dr. Roe called attention to the fact that in all these cases where the deformity is the result of traumatism there is displacement of the nasal bones outward, leaving the nose much broader than before. Therefore in correcting these deformities it is necessary, in order to restore the nose to its normal width, to take off these bony ridges found on each side. In attempting to restore the symmetry of the nose by raising it in the centre alone, it was necessary to raise the nose very much higher than it normally was, in order to make it harmonise with its broader base. During his earlier experience in this work Dr. Roe had attempted this plan, and had devised special instruments for forcibly breaking and raising the centre of the nose in these cases, but without

success. It was far better to cut off the projecting portions of these bones or displaced tissues and place them in the centre of the nose than to elevate the nose to an undue height.

He had not observed the development of carcinoma as the result of the use of paraffin. His observations, however, regarding the use of paraffin were mainly confined to cases in which it had been used by others, for he had found it so much less satisfactory than his subcutaneous method for the correction of depressed deformities that he had not adopted it. He had also seen quite a number of cases in which the injection of paraffin had been most unsatisfactory, doubtless due in some cases, as Dr. Smith had said, to lack of skill on the part of the operator. In nearly all these cases the paraffin had caused so much disfigurement, not only from unequal and undesirable distribution under the skin, but from marked and persistent redness of the skin, that the removal of the greater portion of the paraffin was necessary in order to relieve these conditions.

Dr. GOLDSTEIN, in closing the discussion, referred to a point to which Dr. Duel had taken exception. In the class of cases associated with macrotia there was distinctly a redundancy of cartilage which, from both the mechanical and surgical point of view, must be disposed of. In the operation described by Dr. Duel, in which he had spoken of manipulating the auricle and drawing it back to the head, it was difficult to see how this redundancy of cartilage would be disposed of unless he produced synechia of the two adjoining surfaces of cartilage. The removal of an elliptical section was much simpler. The modification of the Stacke-Jansen operation as described by Dr. Allport was practically the modification of Pascal, and had been performed for years. He had not included skin-grafting in his paper because this was not necessarily a part of plastic surgery. The modification suggested by Dr. Jansen of Dr. Goldstein's operation for closure of post-auricular fissure would hardly be sufficient to make permanent closure without retraction. In two or three out of twenty cases operated upon by this method he was able to place the knuckles of two fingers in the cavity, and yet he had no trouble in closing. Referring to the matter of plaster casts, he said it was difficult to get a cast of the ear on account of the softness and elasticity of the tissues. He described a method which he had employed satisfactorily by means of a composition used by dentists.

*(To be continued.)*

PROCEEDINGS OF THE PARISIAN SOCIETY OF  
LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

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January 8, 1909.

M. ROBERT FOY showed a nasal dilator constructed of a simple nickled spring, which only takes its support on the inner surface of the alæ nasi, without touching the septum. Its advantages are, very easy adjustment, impossibility of the alæ coming into contact with the septum during thoracic aspiration, and possibility of resistance exercises developing the alæ, the latter contracting actively on the spring. Lastly, the apparatus can be worn not only during educational exercises, but if necessary all day.

M. COURTADE long ago contrived a dilator for the nostrils, made of a thin steel plate, in the form of a very elongated ellipse, the shape and size of a normal naris; a little hook fitted to one of its edges supported it against the columella, preventing it from slipping up into the nasal fossa. A thin covering of rubber preserved it from rust. Respiratory tracings taken with the author's pneumodograph before and after the application of the dilator demonstrate its utility, particularly in cases of narrowing of the nostrils from deviation of the anterior border of the septum. In bilateral aspiration of the alæ two elliptical dilators are required; they can be connected by a stirrup which embraces the columella.

QUININE IN NOCTURNAL SPASMODIC COUGH OF LARYNGO-TRACHEAL  
INFLUENZA.

M. J. GLOVER, in cases where the usual means have failed, recommends the employment of sulphate of quinine in large dosage, .75 or 1 gramme per diem for several days. Whatever may be the mode of action of the drug, whether vascular, vaso-constrictor, etc., one obtains good results in conditions sometimes very refractory and troublesome.

FUNCTIONS OF THE TONSIL; VASO-TROPIC, NASAL AND PHARYNGEAL  
DISORDERS; OTO-THERAPY.

Besides infectious phenomena, one observes vaso-motor and secretory troubles in the region of the palatine and pharyngeal tonsils. Moreover it is pretty frequent to see a shrinking of the palatine tonsils after the removal of the pharyngeal, even to such a



degree as to be able to dispense with all intervention on them. If one takes one's stand on the functional co-ordination of glands with internal secretion, one must admit in these cases, in view of the synergy between the organs, a compensatory ability, a correlation hypertrophy for the purpose of functional accommodation. Basedow's syndrome has been described in adenoid subjects and adenoid vegetations, and tonsillar hypertrophies have been considered a sign of myxedema. If the function of certain glands with internal secretion, as the thyroid (seeing its relation with growth) and the pituitary body (seeing its relation with giantism), has a real bearing on the growth and development of the organism, there is no need for astonishment in observing increased growth and functional disturbances of glands more or less marked, when tonsils and adenoids are too radically removed.

Opothérapie has in these cases attenuated the vaso-trophic troubles in a decided manner and sometimes brought about their disappearance, together with an improvement in the general condition. Results have varied with the organic juice employed. By adding phosphoric acid to the opothérapie in sufficiently increased quantities the dose can be much reduced, enabling one to obtain the same effects, local and general, without toxicity during a prolonged treatment.

Tonsillar juice alone or associated with thyroidine and pituitary has been employed in tonsillar dystrophies in the case of infants from five to fifteen years of age. By adopting these various methods of treatment a pretty rapid reduction of the tonsillar hypertrophy has been induced by intervening solely on the pharyngeal tonsil, and even sometimes without any surgical treatment when there was no pressing indication to operate.

Up to the present oto-scleroses have not been influenced.

M. LERMOYEZ called to mind that the first trials of opotherapeutic treatment for adenoid vegetations date back to Hertoghe, of Antwerp, who about 1898 enunciated the hypothesis that adenoid vegetations and the general troubles associated with them arose from thyroid insufficiency. He prescribed thyroid treatment for his patients; it was practically, however, inefficacious. M. Lermoyez, nevertheless, does not believe that the idea of utilising opothérapie in these cases need be abandoned. He admits, after numerous clinical observations, that adenoids do not interfere with development by simple mechanical obstruction, but that they must give rise to secretion and absorption of a poison hindering growth, and especially affecting the nervous system. He is disposed to admit

in these patients a perversion of the normal function of the adeno-tonsillar glands, a kind of hyper-adenoidism, analogous to the hyper-thyroidism in the subjects of Basedow's disease.

#### LABYRINTHITIS.

M. A. HANTANT performed the ordinary radical operation on a patient shown at the last meeting, attacked with suppuration of the attic, with vertigo and functional abolition of the semi-circular canals. There was a small cholesteatoma and osteitis above the horizontal portion of the facial canal. A fortnight afterwards pressure applied to the region last named induced nystagmus. There was a return of thermic irritability and exaggerated rotatory nystagmus, especially on the diseased side.

In the case of another patient, the subject of left suppurative labyrinthitis, on whom M. Hantant had performed an *évidement* for chronic otorrhœa, a slight and transient facial paralysis was observed during the after-treatment, and subsequently destruction of both portions of the labyrinth. There were no general nor meningeal symptoms. During a second intervention, examination with a probe gave rise to a gush of pus from the neighbourhood of the fenestra ovalis. Trephining of the promontory with evacuation of pus. Fistula and osteitis over the external semi-circular canal; curettage of all the canals. Recovery in a month.

#### OPERATION FOR MAXILLARY SINUSITIS UNDER REGIONAL ANÆSTHESIA.

M. MUNCH induced anæsthesia by injecting a weak solution of cocaine into the trunk of the second division of the fifth nerve at its point of emergence from the foramen rotundum, where it enters the spheno-maxillary fossa. Anæsthesia of the entire maxilla was thus induced, enabling one to perform the Caldwell-Luc operation without pain. Moreover, the after-results are very favourable, and convalescence is more rapid than when one intervenes under chloroform.

#### RESECTION OF SPURS FROM THE SEPTUM NASI; INSTRUMENTS, TECHNIQUE AND DRESSINGS.

M. G. A. WEILL exhibited some nasal saws, thin and rigid, constructed of a steel blade, blunt-pointed, grooved and non-locking. He incises the mucosa horizontally along the summit of the crest and vertically 1.5 centimetres in front of it, detaches the anterior

part of the flap, attacks the spur from below upwards and completes its removal by torsion. For dressing he inserts a tampon of puyawar between the two sheets of a gauze tent; the puyawar is withdrawn alone at the end of forty-eight hours and the rest of the dressing two days afterwards.

G. VEILLARD.

## AUSTRIAN OTOLOGICAL SOCIETY.

*May 25, 1908.*

### HEADACHE FOLLOWING RADICAL MASTOID OPERATION.

BY DR. VICTOR URBANTSCHITSCH.

A girl, aged nineteen, two years previously had had a radical operation performed on the left side on account of a chronic otorrhœa, and since that date had suffered from severe headache. Another operation was undertaken in order to investigate matters, at which an adhesion was discovered between the skin and the dura of the middle fossa of the skull. This was divided and the headache had disappeared.

### A CASE ILLUSTRATING THE DIFFERENTIAL DIAGNOSIS BETWEEN CEREBELLAR ABSCESS AND "SEROUS" MENINGITIS OF THE POSTERIOR CRANIAL FOSSA.

BY DR. ERICH RUTIN.

A young man, aged twenty-two, had suffered since his childhood from a chronic discharge in the right ear. An acute exacerbation had occurred, associated with violent headache, giddiness, vomiting, shivering, and fever. In this condition the patient sought relief at the clinic on April 8, when the following note was made: The posterior superior wall of the meatus was swollen, the meatus itself entirely filled by a sessile firm polypus, around which issued a foul-smelling discharge; tenderness of the mastoid process, extreme sensibility of the skull and cervical vertebrae to blows on the head. Undoubted congestion and œdema of the right optic papilla. Temperature,  $38.2^{\circ}$  C.; pulse, 84. The remaining internal organs and nervous system revealed nothing abnormal. Total deafness on the right side, Weber to the left.

Bone-conduction on the right side very much shortened; spontaneous rotary nystagmus towards the diseased side. No evidence of a fistula. On the left side a dry perforation.

As the right labyrinth gave no response to stimulation, the spontaneous nystagmus directed towards the diseased side pointed undoubtedly to a cerebral abscess or meningitis involving the posterior cranial fossa. As cerebral abscess was suspected no lumbar puncture was undertaken. Ruttin performed a radical operation and found a very fetid cholesteatomatous mass in the antrum and fistulae both in the horizontal and posterior semi-circular canals. The posterior wall of the petrous bone was eroded up to the dura. The dura in the posterior fossa was covered with reddish granulations. Neumann's labyrinth operation was carried out. In a few days the right-directed nystagmus gradually disappeared and the headache ceased. The presence of a cerebral abscess was therefore rendered extremely improbable; and, indeed, three weeks later the patient was in excellent health and the wound soundly healed. From these data Ruttin assumes that the nystagmus was dependent on a "serous" meningitis of the posterior fossa, because the direction and intensity of the nystagmus never altered before the operation, but afterwards merely slowly disappeared.

## Abstracts.

### PHARYNX.

Colyer, J. F.—*Adenoids and the Feeding of Infants in Relation to the Growth of the Jaws.* "Reports Roy. Soc. Med.," vol. ii, No. 2, December, 1908.

The author has taken measurements, casts, and tracings of the alveolar arches in a large number of children (ages not stated). He classifies his material under the following headings: "private cases," "hospital cases," "breast-fed," "hand-fed," "without adenoids," "with adenoids." The results obtained by an analysis of his cases, generally speaking, favour an adherence to the older views on the relationship supposed to subsist between adenoids and the development of the jaws, but one or two of the conclusions reached seem to call for further investigation, as, for example, "the effect of adenoids in narrowing the arch is less felt in hand- than in breast-fed children." Like previous observers, he is able to record cases of imperfect maxillary development occurring in children who have never had adenoids and who have been exclusively reared on the breast.

Dan McKenzie.

**Candler, J. P.**—*Case of Malignant Jaundice occurring during the Course of Graves' Disease and associated with Gangrenous Tonsils*. "Reports Roy. Soc. Med.," vol. ii, No. 2, December, 1908.

The title sufficiently indicates the nature of the communication.

*Don McKenzie.*

**Sendziak, J.** (Warschau).—*Results of more than 1000 Operations on so-called "Adenoids."* "Monatschr. f. Ohren," Jahrg. 42, Heft 1. Review by J. ROTSCHEID (Frankfurt a. Maine), in "Arch. f. Kind.," Bd. 49, Heft 1 and 2.

Amongst 21,000 patients the author found 1995 cases of "adenoids"—about 10 per cent. principally between the ages of ten and twenty, more rarely between five and ten. The youngest child was only three months old. He considers there is undoubtedly an association between this affection and "scrofula," and that heredity has some relation to the condition in a few cases. He refers to the frequency of these growths in idiots, and calls attention to the fact that many cases of obscure fever in children under eight are attributable to inflammatory conditions in the post-nasal space. Co-existent hypertrophy of the inferior turbinals and tonsils was frequent. The connection between deafness and adenoids is noted. In seven of his cases removal of the growth resulted in the restoration of both hearing and speech. He is sceptical as to the relation between adenoids and enuresis, having seen this condition persist after operation on adenoids; still he thinks it is always right to try this treatment.

He has seen "asthma" completely cured six times, and improved in sixteen cases, while seven cases of epilepsy were also completely cured, and the condition improved eighteen times. The naso-pharynx should always be examined in cases of speech disturbance. Posterior rhinoscopy is preferable to digital examination. For the operation he only uses Beckmann's curette. As regards complications he had no deaths, but he had four severe cases of hæmorrhage, and the operation was followed by scarlet fever once, measles twice, malaria twice, follicular tonsillitis seven times, peri-tonsillar abscess twice, transient paralysis of the palate four times, and in five cases some affection of the ears ensued.

*Alec. R. Tweedie.*

**Stumpf.**—*The Kaolin Treatment of Diphtheria.* "Zentralblatt für Kinderheilk.," November, 1908.

This consists in the administration of the "kaolin" in a spoon every five minutes, or oftener, by the mouth. Subsidence of fever, pulse-rate, and disappearance of the other manifestations of the attack commence in two to three hours, and within forty-eight hours complete recovery has taken place. Fifteen cases are said to have been successfully treated by this method, of ages varying from eighteen months to eleven years.

*Alec. R. Tweedie.*

**Kronig, G.**—*Present-day Treatment.* "Zentralblatt für Kinderheilk.," July, 1908.

The author maintains that local relief by incision is necessary in cases of diphtheria of the fauces in order to allow the antitoxin to reach the infected areas, as otherwise, owing to the impaired circulation, a meeting of toxin and antitoxin is prevented.

*Alec. R. Tweedie.*

**Vohsen, K.** (Frankfurt).—*An Operation for Malignant Tumours of the Tonsil.* "Zeitschr. f. Laryngol.," vol. i, Part II.

The operation advocated in this paper is to be regarded as an improvement on those of Langenbeck and Mickulicz. The incision of Mickulicz, extending from the mastoid process to the great cornu of the hyoid bone, is employed, and the lower jaw is divided obliquely in front of the masseter. The essential feature of the author's method is that the pharynx is reached, not by drawing apart the two fragments of the lower jaw, but by pushing the posterior fragment forward outside of and over the anterior. By forcible retraction a wide space can then be opened up between the ascending ramus of the lower jaw on the one hand and the anterior edge of the sterno-mastoid, together with the digastric and the stylohyoid on the other. This allows complete access to the region of the tonsil, the lateral wall of the pharynx, and the entrance to the larynx. The operation also admits of the removal of affected glands, while no muscle, nerve, or great vessel is injured, and no preliminary tracheotomy is required.

Thomas Guthrie.

**Richardson, M. H.**—*Total Extirpation of the Lower Pharynx for Epithelioma, with Permanent Œsophagostoma; Remarks upon the Surgical Treatment of Cancer.* "Boston Med. and Surg. Journ.," November 5, 1908.

This case, a woman, aged forty-seven, was operated upon on November 15, 1902. In spite of the fact that she has lived entirely upon liquid food introduced through an artificial opening in the neck by means of a tube, the patient is alive and in good health at the present date. The paper should be read in the original.

Macleod Yearsley.

**Hall, F. J. Vincent.**—*Adhesion of Soft Palate to Naso-Pharynx.* "Brit. Med. Journ.," January 2, 1909.

Two cases, aged six and eleven, came under Dr. Hall as cases of "adenoids." Under anæsthesia complete adhesion of the soft palate and naso-pharynx was found, with no adenoids. The adhesions were broken down by the finger with satisfactory results.

Macleod Yearsley.

**Bloch, Friedrich.**—*Hypertrophy of the Pharyngeal Tonsil and its Sequelæ.* "Prag. med. Wochens.," xxxiii, 26, 344.

This paper consists of a *resumé* of well-known facts. W. G. Porter.

## NOSE.

**Allen, H. R.** (Indianapolis).—*New Process for making New Noses.* "Boston Med. and Surg. Journ.," November 26, 1908.

It is suggested that this method permits the patient "to select his own features because he could have a nose of any shape or size desired." The process is divided by the author into heads: (1) make a plaster-of-Paris mask of the noseless space; (2) model half-a-dozen different noses appropriate to the face; (3) if desirable, model other features of the face needing improvement; (4) make a hollow metallic frame to reproduce nose under the skin; (5) operation: pull forward upper lip and make an incision 1 cm. below the gingivo-labial fold about one third the thickness of the lip and running parallel with the gum margins of the upper teeth, terminating opposite the first molar. Dissect the soft tissues of nose and face free from the skull, avoiding the tear-ducts and nerves coming from

the infra-orbital foramen; (6) place a nostril-hook into the nares and bring it down under the upper lip; (7) draw the tissues upwards and outwards by means of the hook; (8) prepare foundation for the metallic bridge; (9) place the latter under the lip and manipulate it into permanent position; (10) suture the original wound. In cases without any nasal soft tissues the skin on each side of the nasal orifices must be dissected up and sutured in the median line. Later, when firm union is obtained, the operation above described can be proceeded with.

*Macleod Yearsley.*

**Curran, E. J.** — *The Ethmoid Cells at Birth, and their Development during Fetal Life.* "Boston Med. and Surg. Journ.," October 29, 1908.

This paper, from the Laryngological Department of the Harvard Medical School, is well illustrated by drawings of dissections. It has been frequently stated that there are no ethmoid cells at birth, but Curran found from fourteen heads that the same number of cells are present that are found in the adult.

The paper requires careful perusal in the original.

*Macleod Yearsley.*

**Freer, O.** (Chicago).—*The Submucous "Window-Resection": a Supplementary Contribution.* "Archiv für Laryngol.," vol. xx, Part III.

Since the publication of his paper in the eighteenth volume of these archives, the author has been led by a wider experience to certain improvements in instruments and technique, and to a more complete understanding of the anatomical peculiarities met with in septal deflections.

He still greatly prefers his L-shaped incision to the "button-hole" incision of Killian and Hajek, which, in his opinion, gives in most cases quite insufficient access for the complete removal of crests and spurs. He describes the methods which he employs for overcoming certain difficulties sometimes met with, such as already existing perforations and scars left by previous operations. He draws attention to the great variations in the size of the quadrilateral cartilage, and to the fact that it not infrequently oversteps the limits of its bony framework and covers the side of the vomer or median plate of the ethmoid to a greater or less extent. When a crest or spur is removed by sawing it is often this cartilaginous covering only that is removed, the bony portion being left untouched. Much stress is laid on the importance of removing the incisive and maxillary crests, which together form the "septal ridge." The not infrequent omission of this step, and the consequent disappointing result, he ascribes mainly to the use of the "button-hole" incision. His cases include forty-two children between the ages of seven and fifteen, of whom twelve were not more than eleven years of age. In three of these cases a partial reappearance of the "vertical angle" of the deflection took place, but in all the others the result was quite as good as in the adult.

*Thomas Guthrie.*

**Trautmann, J.** (Munich).—*Bleeding Polypus of the Septum.* "Archiv für Laryngol.," vol. xx, Part III.

The author reports three cases in which the growths were examined microscopically. The first was stated to be an "angioma fibromatosum." In places it showed definite proliferation of the cells lining the vessel-

walls—possibly an indication of endotheliomatous change. In the second case the tumour was a "very vascular polypoid fibroma." The growth recurred after removal, and when again removed presented the microscopic appearances of simple granulation tissue. In the third case the tumour was a "vascular fibroma." The old beliefs that these growths occurred only in women and on the left side of the nose are no longer tenable. In two of the cases here reported the right side was affected, and the patients were males.

Thomas Guthrie.

**Dumont, Prof. Dr. F. (Berne).—*Rectal Anæsthesia.*** "Corresp.-Blatt. für Schweizer Aerzte," December 15, 1908.

The author gives a historical review of this method of administering ether from its introduction by Pirogoff in 1849 up to date. He discusses the various modifications of administration which different experimenters have adopted, and the appliances which they used. He considers that the apparatus suggested by Dudley Buxton, with a slight alteration of his own, is the most satisfactory. Having elaborated on these two points he goes on to describe his own experiences, and gives an account of four operations he has performed with this method. These comprised two "radical" operations on the maxillary antrum, one on the antrum and frontal sinus in the same patient at the same time, and one on a case of extreme deflection of the nasal septum. He is eminently satisfied with his results, and lays great stress on the advantages thereby gained both by the surgeon and patient. He refers in some detail to the preliminary precautions he deems necessary, and also to the mode of administration, and brings a most instructive article to a close by expressing his opinion of these methods in the three following conclusions:

(1) Rectal anæsthesia is to be recommended as an excellent method in all operations on the head and neck where administration by the nose or mouth would interfere with the operation.

(2) It should, however, be regarded as an exceptional method of maintaining anæsthesia, for which the patients must be properly prepared; and its use should be restricted to experienced anæsthetists.

(3) Its application is contra-indicated in all acute and chronic diseases of the bowels.

Alex. R. Tweedie.

**Lemaire, Jules.—*A Case of Gangrene of the Nose running a Rapid Course.*** "Ann. de Méd. et Chir. Inf.," June 15, 1907. Review by PH. KUHN, Berlin, in "Arch. f. Kind.," Bd. 49, Heft 1 and 2.

This article treats of a case of gangrene of the nose which led to a fatal termination within five days. It occurred in a child aged six and a half years, who had suffered from tuberculosis a long while, and who lived in very poor circumstances. He was also in the habit of "picking" his nose. The author regards the case as a kind of noma in an unusual situation.

Alex. R. Tweedie.

**Goldsmith, Perry G. (Toronto).—*Suppuration in the Accessory Nasal Sinuses.*** "Canadian Lancet," October, 1908.

The writer believes that suppurative disease of the nasal accessory sinuses is of very common occurrence (?), being frequently overlooked by the medical profession, and even by specialists. In dealing with these cases, the patient's desire should in a measure guide one in the method of treatment adopted. The age and general constitution should also be considered. In aged people chronic antral trouble is always more distressing in winter time, and in such cases it is often better, as well as



more satisfactory to the patient, to give temporary relief than to operate.

Several other important items were also dwelt on in this paper: the severe constitutional symptoms sometimes occasioned by sinus disease; the character and extent of discharge being no indication of the period necessary for treatment and cure; the fact that scraping the affected sinus means extensive degeneration of the mucous membrane and replacing the same by scar-tissue. In conclusion, the usual methods of surgical operation were referred to, in antral disease preference being given to operation through the inferior meatus of the nose.

*Price-Brown*

**Donalies** (Leipzig). — *A Rhinogenic Brain-Abscess*. "Arch. f. Ohrenheilk." Bd. 75, Heft 3 and 4, p. 199.

A boy, aged twelve and a half, while suffering from a mild attack of nasal catarrh with very little discharge from the nose, fell and struck his forehead against the sharp corner of a bench. The skin was not broken, but a swelling slowly formed at the place struck during the subsequent week. At the same time complaint was made of malaise and pains in the head, and pus and blood were discharged from the nose on both sides. On examination pus was observed emerging from under the middle turbinal on both sides. Temperature, 39° C. (102° F.), pulse, 98. The patient looked very ill.

A vertical incision in the middle line was made and a subperiosteal abscess evacuated. Both frontal sinuses were then opened and found to contain pus under pressure. But the operation failed to relieve the general symptoms. A week later convulsive attacks occurred, involving the whole of the left side of the body, particularly the facial region, and associated with loss of consciousness.

During a fit chloroform was administered, and the right frontal lobe explored through the frontal sinus of the same side with a negative result. The fit continuing during narcosis, the left frontal lobe was exposed, and first an extra-dural abscess and then a small abscess in the brain substance evacuated. Recovery.

Attention is drawn to the association of left-sided convulsions with an abscess on the same side of the brain. The author has been unable to discover a case similar to this anywhere in the literature.

*Don McKenzie.*

**Okuneff, B. N.** (St. Petersburg). *Resection of the Lacrimo-Nasal Duct*. "Archives internationales de Laryngologie, d'Otologie et de Rhinologie."

The author quotes a number of writers who have already noted the close connection between the eye and the nose, and who have advocated cauterisation of the turbinates as a means of curing a discharge from the eye. He says: "My experience of operations for the removal of the anterior end of the turbinate in individuals affected by ophthalmia has convinced me that a cure cannot be obtained in this manner. I then considered the resection of the tear duct; I made several experiments in the latter part of 1906, and from that date onward have practised this operation as often as the opportunity presented itself. The operation I recommend to my colleagues is done in two parts: the removal of the anterior end (frequently one third or even one half) of the inferior turbinate and the resection of the tear duct. I begin by using an injection

of cocaine and adrenalin or an application of a 10 per cent. solution of cocaine. I make an incision in the mucous membrane of the interior turbinate about one third or even one half from the end (in the latter case I am presuming I shall find the opening of the tear duct above its usual position)."

It is necessary to remove enough tissue to leave the tear duct free. He resects the walls of the tear duct with special scissors made for him by Herber, St. Petersburg. The author records several cases to prove the value of his method.

Anthony McCall.

**Ferreri, Prof. (Rome).—***Clinical Considerations on Combined Sinusitis.* "Atti della Clinica del Prof. Ferreri di Roma," Anno v, 1907.

The author calls attention to the pansinusitides, showing their frequency and treating their pathogenesis in general.

He prefers not to open the sinus at the first sitting, making an exception only in cases in which a threatening pyæmia calls for an immediate operation.

He relates five cases, one of which he operated on by Killian's method, and the others by Ogston-Luc's method. In all he had successful results with the exception of one, in which the patient refused to be operated upon in time.

V. Grazzi.

**De Carli.—***A Very Rapid Method for the Diagnosis of Rhinostenosis.* "Bollettino della Malattie dell'Orecchio, etc.," November, 1908.

The examiner stands in front of the patient and asks him to shut the mouth and make a strong inspiration through the nostrils. If the choanæ are in a good state the *alæ nasi* will draw near the septum; if the cavity is reduced the *alæ nasi* will remain more or less still and not approach the septum.

V. Grazzi.

## THYROID AND NECK.

**Smoler, F.—***An Unusual Injury to the Neck.* "Prag. med. Wochens.," xxxiii, 27, 367.

The patient, a boy, aged five, fell while carrying a glass bottle; the latter burst and a splinter cut him on the left side of the neck. The wound was about 1 cm. in length and was situated below the level of the thyroid cartilage, midway between the trachea and the anterior border of the sterno-mastoid. The direction of the wound was upwards and backwards; there was no surgical emphysema. The following day milk which had just been swallowed escaped through the wound in drops; it was therefore explored under an anæsthetic. A small opening the size of a pea was found in the œsophagus; it was partially occluded by prolapsed mucous membrane. There was also a small orifice in the trachea; this was closed, but the wound in the œsophagus was left open as the edge was ragged, a drain being inserted. Tracheotomy was then performed in the usual way. Complete healing of the wound took place within five weeks, the tracheotomy tube having been removed after the first fortnight.

The author points out that wounds of the œsophagus from without are comparatively rare. Schüller has collected 48 cases and Wolzendorf 7. The danger of the accident apart from the risk of injury to the great vessels is that a deep-seated suppuration may be set up in the neck which may spread to the mediastinum.

W. G. Porter.

**Bircher, E.** (Basel).—*Primary Carcinoma of an Intra-tracheal Thyroid.* "Arch. für Laryngol.," vol. xx, Part III.

The disease occurred in a woman, aged fifty-six. Tracheotomy was required for severe dyspnea, and pieces of new growth removed later through the tracheotomy wound showed the macroscopic appearances of thyroid carcinoma. Subsequently laryngo-fissure was performed and the affected surfaces of the trachea and larynx were extensively cauterised. Death occurred five days later.

Intra-tracheal new growths are so uncommon that, although intra-tracheal thyroids form a considerable proportion of them, less than twenty cases of the latter have been hitherto reported. The author has been unable to find in the literature any certain record of the occurrence of primary carcinoma in an intra-tracheal thyroid.

Thomas Guthrie.

**Alessandri, Prof. A.**—*Echinococcal Cysts of the Thyroid Gland.* "Atti della Clinica del Prof. Ferreri di Roma," Anno v, 1907.

He adds a case to the literature. Partial extirpation, followed by fastening the remainder to the skin, and occlusion bring about recovery in a short time without danger.

F. Crozzi.

## EAR.

**Richards, H. F. B.**—*A very Successful Method of Treating Acute and Chronic Suppurative Otitis Media.* "Lancet," November 30, 1907.

The author has found that carbolic acid and preparations of mercury appear to be too irritating to the ear, and that peroxide of hydrogen was disappointing. He warmly recommends the following formula: Boric acid, 1 drm.; rectified spirits of wine, 2 or 3 drms.; glycerine to make up 1 oz. This is non-irritant and non-toxic. In addition he recommends it in the condition of granulations and chiefly for furuncle of the external auditory meatus.

Stclair Thomson.

**Scott, Sydney R.**—*Three Successful Cases of Operation on the Labyrinth.* "Lancet," December 14, 1907.

In these three cases the disease arose as a complication of chronic suppurative otitis media. In the first case the chief clinical symptoms were vertigo and partial deafness. A complete mastoid operation was performed, and a fistula was found leading from the tympanum through the fenestra ovalis into the vestibule. The external and superior semi-circular canals and vestibule were extirpated with part of the walls of the Fallopian aqueduct, but the cochlea and facial nerve were left intact. The patient made a rapid recovery, being at once completely relieved of the vertigo and tinnitus.

In the second case the chief symptoms were otorrhœa, vertigo, and complete deafness. In the part removed the normal structures of the cochlea and vestibule were found to be entirely destroyed by granulation tissue.

In the third case there was a cholesteatoma in the antrum with a superficial mastoid fistula. The external semi-circular canal was found to be eroded, and the stapes were destroyed. Routine exploration with the vestibular probe is not recommended except there be (1) vertigo of a

definite type and (2) constant and well-marked perosseous diminution of hearing.

*StClair Thomson.*

**Blegvad, V. Rh.** (Copenhagen).—*The Influence of their Calling upon Telephone Operators, particularly with regard to the Hearing.* "Arch. f. Ohrenheilk." Bd. 72, Heft 1 and 2, and 3 and 4.

After a prolonged series of investigations upon 371 telephone girls, which are minutely described and fully commented upon in his article, the author arrived at the following findings and conclusions:

In 26 1/4 per cent. of the operators with normal hearing, retraction of the membrana tympani was found in the ear most used at the telephone. In the other ear there was no change or the retraction was but slight. Probably the abnormality was, directly or indirectly, induced by the telephone. The author draws attention to the fact that this finding of his does not agree with that of Braunstein, who found that the ear used was more frequently normal in appearance than the other.

No reduction in the hearing-power of telephone girls compared with that of other people with healthy ears was observed. The girls often declared that their hearing was more acute than that of other people, but this was not borne out on examination. Probably they were sharper at catching conversation over the telephone than other people because they had accustomed themselves to the noises around them as well as to the adventitious sounds in the telephone itself.

Reports have been published of serious damage to the ear, traumatic neuroses, etc., resulting from lightning strokes or violent electric shocks, but in Copenhagen, although lightning has frequently caused temporary disablement, no serious cases have been met with.

A number of complaints of irritation in the meatus, pains in the ear, tinnitus, pressure, fullness, etc., were attributed to the telephone.

Some of those who used the "head-telephone" complained of the pressure it exercised upon the ear; a few suffered almost constantly from acne pustules or furunculosis, and one was compelled to use the right ear owing to pressure-ulceration in the left auricle.

A large number admitted that their occupation had made them "nervous" and easily tired, and a few nervous persons suffered from headache and auditory neuroses, such as pain, tinnitus, hyperæsthesia acustica, etc., due probably to the incessant strain thrown upon the attention and the hearing by their occupation.

The author advises that only those whose hearing is good and whose ears are quite healthy should be admitted into the telephone-service; and he holds also that anæmic and nervous individuals should be debarred from becoming operators.

*Dan McKenzie.*

**Tweedie, Alexander R.**—*Otosclerosis; Some Points in its Ætiology, Diagnosis, and Treatment.* "The Lancet," December 19, 1908.

In the course of a general *resumé* of the modern views on the disease the author lays much stress upon the necessity for general tonic and hygienic treatment. He has found the results of oto-massage disappointing and utters a warning against operative or active treatment of any associated catarrh of the nose, etc., as likely to lead to an aggravation of the ear-complaint.

He expresses his objection to the suggestion which has been made, that women afflicted with the disease should not be allowed to become pregnant, lest an increase in the deafness follow.

*Dan McKenzie.*

**Jaboulay, M.**—*Facial Paralysis of Otitic Origin; Palliative Treatment of Lagophthalmos by Division of the Sympathetic.* "Gaz. des Hôpit.," February 27, 1908.

A youth, aged sixteen, was gradually attacked with facial paralysis. He had always enjoyed excellent health, and his family history was good. At the age of twelve he became deaf in the right ear and complained of tinnitus. There was no discharge. Two years later he noticed that his face became drawn when laughing, and shortly afterwards he experienced difficulty in closing the right eye. The paralysis progressed, and when seen by the author all the signs of Bell's palsy of the right side were obvious, save that sniffing was possible and the gustatory sense was unimpaired in the corresponding half of the tongue. The integrity of the stapedial nerve supply could not be determined owing to the deafness. By a process of exclusion, details of which are fully given, a diagnosis of involvement of the seventh nerve by caries sicca of tubercular nature was arrived at. The writer remarks on the insidiousness of this lesion and its quiescence, and considered a lighting up of the trouble as improbable. As to treatment, having regard to the long standing of the case, the uselessness, in this instance, of electrical therapy and the futility of any surgical intervention on the mastoid, a nerve anastomosis was considered. The unfortunate synergic muscular action attending the usual implantation is commented upon. Lagophthalmos being the most troublesome feature to the patient the author suggested division of the cervical sympathetic at the level of the superior ganglion and uniting the ventral end to the peripheral portion of the facial nerve, thus serving two purposes—correcting the lagophthalmos by paralyzing the unstriated muscle of the upper lid, and at the same time affording the facial nerve a chance of regenerating.

*H. Clayton Fox.*

**Tretróp (Antwerp).**—*The Treatment of Vertigo, Tinnitus, and Defective Audition.* "Revue Hebd. de Laryngologie, d'Otologie, et de Rhinologie," November 14, 1908.

A communication devoted to the treatment of deafness, etc., due to chronic disease of the middle ear. After re-establishing the permeability of the Eustachian tube by means of bougies, the cautious but persevering use of Delstanche's masseur-rarefactor is recommended as well as injections of liquid vaseline. A course of treatment lasting from four to six weeks should be followed by a period of rest. Tobacco and alcohol should be avoided, and the general health attended to. Notes of several successful cases conclude the paper.

*Chichele Nourse.*

**Sagols, P. (Perpignan).**—*Mastoiditis in a Typhoid Patient; Operation; Cure.* "Revue Hebd. de Laryngologie, d'Otologie, et de Rhinologie," November 28, 1908.

At the end of the fourth week of enteric fever, a man, aged twenty-two, developed acute otitis media in the right ear accompanied by increased fever, mastoid pain, and tenderness. As the symptoms continued and the patient was losing ground, a mastoid operation was performed ten days later; it was followed by prompt relief. The antrum contained a drop of pus and a few granulations; the mastoid cells also contained granulations.

*Chichele Nourse.*

**Melland, C. H.**—*Supposed Maternal Impression; Accessory Auricle.* "Brit. Journ. of Chil. Dis.," November, 1908.

A child was born with a marked accessory auricle, and the mother

related that during the *last three months* of her pregnancy she had frequently had brought to her notice a boy, aged twelve, who had a similar deformity on the opposite side to that of her child. Drawings of the two ears are given. The falsity of the supposed "maternal impression" cause is demonstrated by the fact that the auricle is developed by the sixth week, and the mother did not receive the "impression" until after the sixth month.

*Macleod Yearsley.*

**zur Muhlen, Von.**—*A Case of Thrombosis of the Bulb of the Jugular Vein.*  
"St. Petersburger med. Wochenschr.," 1908, xxxiii, 597.

The patient, a boy, aged sixteen, suffered from a chronic left-sided middle-ear suppuration. The temperature was raised ( $39.7^{\circ}\text{C.}$ ,  $103.4^{\circ}\text{F.}$ ), and the radical operation was performed on January 11. No pathological condition was found either in the antrum or in the mastoid process; the lateral sinus also appeared healthy, and bled freely when punctured. On the passage of a probe downwards towards the bulb a little pus escaped, but the bulb was not exposed. The temperature fell but rose again suddenly ( $40.4^{\circ}\text{C.}$ ,  $104.7^{\circ}\text{F.}$ ) two days later. The collapsed sinus could then be opened with scissors, and pus escaped from below. The internal jugular vein was not ligatured. A ganze drain was passed down towards the bulb, and this was changed daily thereafter. Recovery was uneventful.

*W. G. Porter.*

**Bruhl**—*Duties of the Medical Attendant in Schools for Deaf-mutes.*  
"Zentralblatt für Kinderheilk.," November, 1908.

The importance of a very accurate general as well as special examination of these cases is urged, the education of all deaf, or even partially deaf children in special schools, and of keeping records of their condition whilst attending such schools.

*Alex. R. Tweedie.*

## REVIEWS.

*Medical Reports of the Central London Throat and Ear Hospital.* Vol. 1.  
London: Adlard & Son, 1908.

The medical staff of "The Central London Throat and Ear Hospital" are to be congratulated upon the publication of their first volume of "Medical Reports."

The work at this hospital both in its clinical and pathological departments has for long been of a very high standard, and the publication of "Reports" from time to time will undoubtedly prove of the greatest interest and value to the profession, as showing not only the enormous amount of charitable work which is being done at this particular institution, but also the experience of the staff with the more recently introduced methods of surgical technique and therapeutical treatment.

Dr. Dundas Grant discusses the advisability of the retention of the "matrix" in operations for cholesteatoma of the middle ear, and has come to the conclusion that there are times in which such a course of procedure is advisable, and gives details of cases in which its preservation proved successful. When this particular subject was discussed at a meeting of the Otological Society in 1901, the general consensus of

opinion was that as the "matrix" was the product of disease it was advisable to remove it *in toto*. Opinions were, however, more divided when Dr. Grant brought the matter forward again with further illustrations a year later. Histopathological evidence brought forward by Kirschner in 1891 and cited by Dr. Grant is also in favour of its non-retention in general, but further investigation is required. The reader will note with interest, however, that Dr. Grant preserves an open mind upon the subject, indicating merely that in his experience the retention of the "matrix" in certain selected cases has proved quite satisfactory and has given rise to no ill-effects.

Dr. Dundas Grant contributes another paper also upon a somewhat contentious subject, viz., "The Operative Treatment of Septic Lateral Sinus Phlebitis without Ligature of the Jugular Vein," in which he makes a plea for the careful consideration of the question whether the vein should be ligatured or not in certain cases in which there is a sufficient amount of disease in the sinus itself to account for the symptoms. Dr. Grant's attitude is that if the focus of infection is cut off from the circulation—in other words removed—the necessity to ligate the jugular does not exist. Dr. Grant remarks: "Occlusion above our theoretical seat of election is not unfrequently effected by Nature, and a thrombus may occupy the bulb of the jugular vein and the sigmoid portion of the lateral sinus so as to do all that the ligature could do. Of course the thrombus often becomes infected and undergoes purulent disintegration, but we ought to forestall this by the most careful removal of the original sources of infection and by the free clearance of all infected portions of the clot, if possible. That this is often possible the experiences of Sir William Macewan amply prove, though I scarcely think that such a remarkable series of successes could be repeated without in some cases dealing further with the jugular vein" (page 10).

The weak point in Dr. Grant's argument appears to the reviewer to lie in what his (the reviewer's) experience has taught him, viz. that thrombi occurring in the lateral sinus as the result of suppurative middle-ear disease are as a general rule infected and infective.

Dr. Percy Jakins, in an article upon "Mastoid Operations," reports that in 95 per cent. of cases in which some form of radical operation was performed for chronic disease, audition was improved in 95 per cent. of the cases—a truly satisfactory record.

Mr. Chichele Nourse, in discussing the operative treatment of "Nasal Sinus Suppuration," draws a distinction between empyema of the antrum and chronic antral suppuration, using the term "empyema" to denote those cases in which the antrum, though otherwise healthy, acts as a reservoir for pus draining into it from elsewhere. A table of results is appended to what is an interesting and instructive paper.

Various clinical cases of exceptional interest and rarity are described by Dr. Abercrombie.

Mr. Stuart-Low discusses various "Cranial Complications of Otitic Origin," and strongly recommends the employment of fresh horse-blood serum as a dressing in mastoid wounds, as, by encouraging leucocytosis and supplying opsonins and antibodies, it plays a valuable part in accelerating the healing process.

Dr. Andrew Wylie contributes a paper upon "Malignant Disease of the Pharynx and Larynx," with a tabular statement of twenty-four cases.

A particularly interesting paper from the pen of Dr. Dan McKenzie, entitled, "Adenoids, Deformities of the Palate, and Artificial Infant

Feeding," controverts many usually accepted notions, and should be carefully studied in the original.

Dr. Beresford Kingsford's paper, "A review of Twenty Thousand Administrations of Anesthetics for Operations on the Throat and Nose," is worthy of being studied by all aurists, laryngologists and anesthetists.

Dr. Wyatt Wingrave's pathological reports are, as might be expected, of a very high order. The reviewer has on a previous occasion had the opportunity of congratulating the hospital upon having such an excellent pathologist on its staff, and a careful perusal of the pathological reports scattered throughout the volume under review serves only to accentuate what he has already had pleasure in stating.

The volume is in every way one of great interest, and it is to be hoped is the forerunner of many more "Reports" from a hospital staff so thoroughly competent to disseminate knowledge.

W. Milligan.

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*A Manual of Diseases of the Nose and Throat.* By C. G. COAKLEY, M.A., M.D., Fourth Edition, revised and enlarged, illustrated with 126 engravings and 7 coloured plates. London: Henry Kimpton; Glasgow: Alexander Stenhouse, 1909.

Those who had the privilege of attending the meeting of the British Medical Association in Toronto will not have forgotten the impression made upon them by Dr. Coakley, of New York, both from his general share in the discussions and the remarkable collection of Röntgen ray photographs of the sinuses of the nose which he exhibited. They will, therefore, take up his "Manual of Diseases of the Nose and Throat" with the fullest expectation of finding in it a clear *exposé* of diseases of those parts; in this they will not be disappointed, as there is very little of importance that is omitted and very little of unimportance that is retained. The work has gone through four editions, and has therefore given good proof of its acceptability. In the present edition there has been a good deal of revision, but the greatest effort has obviously been made to bring the articles upon deformities of the septum and the operations for chronic diseases of the accessory sinuses of the nose well up to date. It would be strange if there were not room for suggestions for small additions when the book is again brought out, such, for instance, as "subjective nasal obstruction," "caseous rhinitis," "hypertrophy of the anterior lip of the hiatus semi-lunaris," etc. There are also a few corrections in the spelling and in the re-numbering of figures, which the author has no doubt discovered by this time. The old barbarism "meati" instead of "meatuses" has probably crept in by mistake. Among the most interesting and up-to-date points we note the comparative use of the skiagram and transillumination (p. 234), which supplement each other so valuably in the diagnosis of the condition of the frontal sinuses. The book is written by a practical man for practical men, and as such should find a ready sale.

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**Received for Review.**—"Special Hospitals: their Origin, Development and Relationship to Medical Education; their Economic Aspects and Relative Freedom from Abuse." By Richard Kershaw. London: George Putman and Sons, Ltd., 1909. "Der Otitische Kleinhirnsabszess." By H. Neumann. Leipzig and Vienna: Franz Deuticke.



THE  
JOURNAL OF LARYNGOLOGY,  
RHINOLOGY, AND OTOTOLOGY.

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### RETIREMENT OF SIR FELIX SEMON.

WE have much pleasure in drawing the attention of our readers to the steps that are being taken for offering Sir Felix Semon a testimony as to the esteem in which his work for the benefit of laryngology is held by those who are best able to judge of it. The following is the text of a notice which is being issued to his British *compères*, and we are sure that it will receive their favourable attention :

"A general meeting of laryngologists was held at the Royal Society of Medicine on March 5 to organise a testimonial to Sir Felix Semon on the occasion of his retirement. This takes place at the end of the coming June.

"Mr. Butlin was unanimously elected Chairman of the General Committee, and Dr. Dundas Grant, President of the Laryngological Section, was elected Chairman of the Executive Committee, which consisted of the following :

"Mr. Butlin (Chairman General Committee), Dr. Dundas Grant (Chairman of the Executive Committee), Mr. Charters Symonds, Mr. Cresswell Baber, Dr. J. B. Ball, Dr. Law, Dr. McBride, Mr. Herbert Tilley, Mr. E. Waggett, Dr. Sandford, Dr. de Havilland Hall, Dr. Seanes Spicer, Dr. StClair Thomson (Hon. Treasurer, 28, Queen Anne Street), Dr. Watson Williams (Hon. Secretary, 4, Clifton Park, Bristol), Dr. H. J. Davis (Hon. Secretary, 8, Portman Street, London, W.).

"Subscriptions may be forwarded to the Hon. Treasurer."

### FURTHER EVIDENCE AS TO THE VALUE OF MODERN LABYRINTHINE TESTS AND OPERATIONS.

AT the risk of wearying our readers with the matter with which our recent issues have been so replete, we must direct their attention to the interesting discussion in the Austrian Otological Society's meeting reported in the present number. The Viennese otologists are not usually consumed with mutual admiration, and their differences of opinion are often extremely marked and quite undisguised. It is therefore all the more interesting to study their discussion of cases illustrating the modern tests for labyrinthine disease which have evolved in their midst, and it is pleasing to see how closely their observations and opinions are in harmony in regard to the value of these tests. Almost a new vocabulary has arisen, and the presence or absence of a "fistel-symptom" is noted without explanation, it being accepted that the occurrence of nystagmus on compression of the air in the meatus is symptomatic of the presence of a fistula in the wall of the labyrinth, or of something equivalent to it, such as a dislocation of the stapes.

In the Otological Section of the Royal Society of Medicine Mr. Sydney Scott read a paper of considerable length on "Vertigo and Nystagmus in Relation to Labyrinthine Conditions," which received considerable applause and gave rise to a discussion which our readers will find worthy of their perusal. The subject is necessarily involved and full of interesting problems. Its clinical importance quite justifies the outlay of time and thought which its comprehension demands, and without which it is impossible to have clear ideas about it.

Professor Jansen, of Berlin, the enterprising pioneer in the surgery of the labyrinth, gives the result of fifteen years' experience in this department, in opening a discussion on the subject at the fourteenth annual meeting of the American Laryngological, Rhinological, and Otological Society. His views will be found in the portion of the reports of that meeting which we produce in the present issue of this Journal (p. 217). He offers a plea for individualisation in the choice of the method of approaching and opening the labyrinth as against the routine adoption of Neumann's method, which has found so much favour, especially in Vienna.

**LARYNGECTOMY: METHOD OF ARTIFICIAL VOICE-  
PRODUCTION.<sup>1</sup>**

By J. W. GLEITSMANN, M.D.,  
New York.

THE larynx, handed round for examination, was removed from a patient, male, aged sixty, December 29, 1908. The operation was performed after the method of Gluck, viz. the trachea was sewed to the skin. I had the valuable assistance of Dr. Kiliani at the operation as well as during the after-treatment, which proved to be an assurance as to the proper execution of the operation, when the fatal issue came.

It has been frequently stated that such operations ought to be reported, if successful or unsuccessful, as only in this way reliable statistics can be obtained. Aside from this desideratum, the case presents some additional interesting features, which I shall briefly mention:

(1) The previous diagnosis before I saw the patient as to the nature of the ailment, which, if based on some clinical observations, was certainly overshadowed by the true lesion.

(2) The small size of the growth after extirpation and opening of the larynx, when we are accustomed to see generally in the specimen a larger tumour than by inspection with the laryngoscope.

(3) The manifold steps to relieve the patient, who had an unusual fortitude of character, and showed unbounded confidence.

I shall condense the history as much as possible and give only the salient points.

Early in summer, 1908, one of our most competent colleagues had seen the patient and detected a small growth in his larynx, the nature of which he could not positively determine. Instead of returning to him after a month, as he was told to do, he went to a Southern health resort, as far as I could learn on the advice of a physician who had previously treated his throat ailment. The Southern physician thought to find symptoms of tuberculosis, in which belief he felt justified by slight exacerbations of temperature and a moderate reaction after tuberculin injections. But the laryngeal condition after several months became so aggravated that he recommended him to call on me for relief.

I saw him the first time October 13, 1908, and found the left

<sup>1</sup> Read before the Section of Laryngology of the New York Academy of Medicine, January 27, 1909.

half of his larynx filled with an irregular and apparently soft growth extending down to the glottis, and a circumscribed, pea-sized growth above the right ventricular band. The tumour did not impress me to be of a tubercular nature, and I also never found at that time nor later any symptoms of tuberculosis. As I could not commit myself to a positive diagnosis, I told the patient excision of some specimens was necessary for microscopic diagnosis, but impressed him at once that he had to consent to a major operation if malignancy was found.

He returned next day, several pieces were excised, those of each side put in different bottles, and the patient went home the next day. The microscopist's report was that cancer existed on the left side, whilst at the right side only pachydermia was found. This statement of an unilateral involvement made me believe that I was justified in removing the growth by laryngotomy, which was done one week after his first visit, and in which the left side was radically exenterated and the major part of the right ventricular band also removed. He recovered from the operation without untoward sequelæ, and left home after a few weeks, no tumefaction being visible, but some muco-purulent secretion persisted. The tracheal and laryngeal wound had completely healed.

As far as I know he had no active treatment whilst home, but after ten days he wrote me that he was restless at night and not breathing as well as when he had left. When he returned I was greatly shocked to find the same encroachment of the larynx as at his first visit, but the growth was now mainly confined to the right half, and formed an irregular mass with peg-like protuberances. Immediate relief was necessary, and I removed at once eleven or twelve pieces endo-laryngeally, chiefly from the right side, one from the anterior commissure and one from the posterior wall. The reaction after this operation was considerable, which did not give the patient the free breathing space which otherwise the removal of the growths had permitted. This condition gradually subsided under local treatment, and twelve days later the patient said that he had not been feeling nor breathing as well for six months past.

The microscopic examination showed unmistakable cancer, but the patient felt well, ate well, and gained in weight. It was therefore deemed best to defer laryngectomy, to which his consent had been obtained, as long as he was improving, or till the growth would recur, which was observed three weeks later.

The operation was made in the usual manner, the trachea

opened and sewed to the skin, the larynx liberated from the œsophagus and the surrounding parts excised. There was no difficulty in uniting the pharyngeal mucosa.

For several days the patient progressed very favourably and swallowed small quantities of milk on the fourth day. On the fifth day—the skin having united—a pocket was found under the skin above the tracheal opening, leading upwards on the right side of the throat, but till evening of the seventh day aside from the above focus of infection his chances for recovery were in his favour. during the night he had a violent coughing spell, after which he became somnolent and could not be roused any more till he died next day at 11.30 a.m.

No autopsy having been made, the immediate cause of his death was most probably a pneumonic process, possibly embolism.

It was my intention to teach, later on, the patient exercises devised for and apt to produce the so-called pseudo-voice, which quite a number of patients have acquired after laryngectomy, either spontaneously or after proper instructions.

The ability to speak in cases of occlusion of the larynx in consequence of morbid processes or of suicidal attempts has been known for several decades. The first case of voice-production after laryngectomy was reported by the late H. Schmid,<sup>1</sup> of Stettin, 1888, and the patient was demonstrated by J. Wolf,<sup>2</sup> 1893, in the Berlin Laryngological Society, on which occasion B. Fraenkel gave already an explanation of the process. The second case is the well-known patient Hickey, operated upon by J. Solis Cohen,<sup>3</sup> April 1, 1892, and shown October, 1893, to the Philadelphia Medical Society. The patient's voice was distinct and loud enough to be heard across a large hall, he allowed himself to be shown in many cities and societies, and one of our *confrères* took him (1895) to England for demonstration at the British Laryngological Association. The two patients of Schmid and Cohen learned to speak spontaneously without any medical advice or training.

The two cases reported by Gottstein, of Breslau, received instructions, based, in the first one, on an observation made by the patient himself, the second one by methodical instructions, derived from the former experience. This first patient<sup>4</sup> learned to pronounce vowels spontaneously when he bent his head down till his

<sup>1</sup> *Arch. für Klin. Chir.*, vol. xxxviii, No. 1, 1888.

<sup>2</sup> *Münch. med. Woch.*, No. 29, 1893.

<sup>3</sup> *Arch. für Laryngol.*, vol. i, 1894, p. 276.

<sup>4</sup> *Arch. für Klin. Chir.*, vol. lxii, No. 1.

chin rested on his chest. Advised by Gottstein to continue his efforts after he had left for his home and to endeavour to produce a sound when raising his head; he could, when seen four months later, pronounce all the vowels in a natural position, and one year after the operation was able to produce different tones and sing a simple song. By utilising the observations made in this patient, Gottstein<sup>1</sup> succeeded to teach the second one an audible voice already six and a half weeks after the operation.

In an elaborate paper on "Voice and Speech without Larynx," read before the Vienna International Laryngological Congress, 1908, Dr. H. Gutzmann,<sup>2</sup> of Berlin, speaks at length about the history, the different modifications, the necessary anatomical requisites, and the method to be pursued for artificial voice production. The opportunity of giving instructions to patients operated upon by Th. Gluck gave him a large experience in his line.

The first requirement for tone production is the creation of an artificial receptacle of air, an air-chamber, as the pulmonary air cannot perform this function any more. The majority of patients succeed in producing this air-chamber by pumping air into the hypo-pharynx by repeated swallowing, which Gottstein's patient was able to do thirty times in succession. In this manner in patients learning to speak an air-chamber is created in the hypo-pharynx, which chamber is located below a space which can be narrowed by will-power, and which is capable of vibration and tone production by the voluntarily emitted current of air from below.

<sup>1</sup> *Allg. Med. Cent. Zeit.*, No. 34, 1905.

<sup>2</sup> *Trans.*, p. 463, and *Zeit. für Laryngol., Rhinol., und Hänge.*, vol. 1, No. 2, 1908, p. 221.

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## SOCIETIES' PROCEEDINGS.

### PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

*Meeting on Friday, March 5, 1909.*

DR. DUNDAS GRANT, *President, in the Chair.*

*Abstract of Proceedings by* DR. DAN MCKENZIE.

The following cases and specimens were shown :

#### CASE OF HUNTERIAN SORE INSIDE THE LIP OF A YOUNG WOMAN.

BY DR. DUNDAS GRANT.

The patient, aged twenty-three, first seen February 17, 1909, complained of swelling in the neck and ulcer in the mouth, the latter being of two and a half months' duration. The voice had been slightly hoarse. There was an oval ulcer a quarter of an inch long and half an inch across on the inner surface of the right half of the lower lip. When first seen on February 17 there was well-marked induration, which could be felt by grasping the skin. There was a mass of enlarged glands, discrete, firm, indurated, and painless, in the right submaxillary region, and just faint redness external to the tonsils on the anterior pillar of the fauces. She was ordered pil. hyd.  $\bar{c}$ . cret. On March 3 the induration of the ulcer was considerably less; the glands on the left side and the post-cervical glands were enlarged. Spirochætae were found in the fluid drawn from the base of the ulcer by means of a hypodermic needle, but not from the surface nor from the glands. There was no history obtainable to throw any light upon the mode of infection.

#### CASE OF TUBERCULOSIS OF THE LARYNX WITH IMPROVEMENT FOLLOWING GALVANO-CAUSTIC PUNCTURE.

BY DR. DUNDAS GRANT.

A man, aged twenty-eight, became hoarse in November, 1906, when he had hæmoptysis. He was submitted to in-patient treatment during the months of November and December, 1907, both apices being affected. In January, 1908, when he first came under

the exhibitor's observation, he was so hoarse that he could only whisper; there was then considerable infiltration of the left cord with superficial ulceration and slight infiltration of the right cord. He was at first treated with an inhalation of a powder of di-iodoform, and instructed to give his voice complete rest. On January 21 his voice remained the same, and galvano-caustic puncture was made in the middle of the left cord, the same being done on the right side a fortnight later. Soon after this the voice returned to such an extent that the patient could utter a few words in a natural tone, but then it went off to a whisper.

On March 2 it was observed that his voice had improved, and it has remained so ever since; there was no obvious ulceration and there was some evidence of cicatrisation and contraction of the left cord, although some hyperæmia still persisted. In May the throat was a little painful and slight ulceration was observed at the posterior extremity of the right vocal cord; he was then treated with the inhalation of di-iodoform powder, and a fortnightly injection into the trachea of guaiacol and menthol in olive oil. In July 50 per cent. lactic acid was applied, and in August a combination of formalin, lactic and carbolic acids, as recommended by Lake. Fortnightly applications of lactic acid, increasing in strength from 60 to 80 per cent., were made until last December. In January of the present year no ulceration was to be seen, though the mucous membrane was somewhat reddened, while the voice had gained in strength. At the present time his voice was better than it had been for eighteen months. There was no ulceration, but simply a slight hyperæmia of the mucous membrane of both cords.

#### CASE OF TUBERCULOSIS OF THE LARYNX IN WHICH GALVANO-CAUSTIC PUNCTURE TREATMENT HAD JUST BEEN STARTED.

BY DR. DUNDAS GRANT.

The patient, a man, aged forty-two, had been affected with pulmonary tuberculosis for two years, and with hoarseness for nine months. He had just come under the exhibitor's observation with almost complete extinction of the voice and considerable expectoration. There was an extensive elongated sessile growth, apparently projecting from the left ventricle and covering the anterior two thirds of the vocal cord. During phonation it fitted into a hollow above the right vocal cord. There was slight infiltration of the ary-epiglottic folds; the larynx was otherwise comparatively un-



affected, and there was no defect in the mobility of the cords. A puncture was made into the middle of the base of the growth four days previously.

#### CASE OF TELANGIECTASIS WITH EPISTAXIS.

BY DR. LAMBERT LACK.

The patient, a woman, aged fifty-three, had suffered from epistaxis for thirty years. The bleeding at times had been profuse, and latterly had necessitated packing the nose once or twice a week. The bleeding always arose from the anterior part of the septum on the right side. The patient was, in consequence, very anæmic. There were typical raised, blood-red, naevoid spots on the right cheek, lips, tongue, and palate. The patient said these sometimes disappear. She had had them also on the chest. There was no history of a tendency to bleed in other ways. She had seven children, the eldest being thirty-four, and many brothers and sisters, and there was no history of any similar disease in the family.

Mr. WAGGETT asked whether the coagulation period of the blood had been estimated.

The PRESIDENT asked whether there was any evidence of cirrhosis of the kidney, as the pulse-tension was above the normal, although, of course, it diminished with the hæmorrhages.

Dr. LAMBERT LACK was unable to tell what the coagulation period was. When the patient first came under his care there was great anæmia from the frequent hæmorrhage, but the bleeding had stopped since calcium lactate had been administered.

#### CASE OF THYROID TUMOUR OF THE TONGUE.

BY MR. STUART-LOW.

A female, aged thirty-two, with a large, firm swelling at the base of the tongue, came recently to the Central London Throat and Ear Hospital, complaining of something growing at the back of the tongue, thickness of the voice, and a constant desire to swallow. A similar condition had existed eleven years before, when an operation was performed at St. Bartholomew's Hospital. She was operated upon again for recurrence nine months ago, also at St. Bartholomew's Hospital. It was now proposed to perform a preliminary laryngotomy, firmly plug the pharynx, and radically remove the tumour.

Mr. SCANES SPICER thought the swelling was cystic since it was translucent on one side. He therefore advised that it should be punctured before any radical operation was undertaken.

Mr. ATWOOD THORNE asked whether Mr. Stuart-Low had obtained the notes of the previous operations at St. Bartholomew's.

Mr. CRESSWELL BABER remarked that these tumours were frequently cyst-like, but not really cystic. Operation should only be undertaken if the symptoms called for relief. Otherwise it should be left alone.

The PRESIDENT reminded members of a case which he showed a year ago, but in which the discomfort was much greater than in the present case, and the voice was also much interfered with. He was able to remove the tumour entirely, but he always had some misgivings as to whether there was any remnant of thyroid gland or some accessory thyroid. But up to the present there had been no sign of myxœdema, and he presumed sufficient of the thyroid body was present.

Mr. FITZGERALD POWELL regarded the tumour as a thyro-lingual cyst. He remembered the case shown by the President a year ago, and was present when it had been operated on. Recurrence after removal of a tumour in this situation indicated either that it was a thyro-lingual cyst or that it was malignant. He had had a case in a child where a thyro-lingual cyst of the size of a hazel-nut had been successfully dealt with by removing it with a snare, and then cauterising the raw surface with a Paquelin cautery. He suggested a similar treatment in this case. If, however, the tumour proved to be solid, an extensive operation would be necessary.

Mr. STUART-LOW agreed that, under certain circumstances, a temporising operation might be performed, but in this instance two such operations had already been undertaken, and now a third had become necessary. He proposed to perform laryngotomy, and then, by splitting the tongue in the middle line, to remove the tumour *in toto*. He intended to visit St. Bartholomew's in order to obtain information on the previous operations.

#### CASE SHOWING AN UNUSUALLY LARGE AND LONG TONGUE.

BY MR. STUART-LOW.

A boy, aged eight, with a remarkably long tongue. From base to tip it measured five inches. The right side seemed to be semi-atrophied in the anterior two thirds. He had had a large mass of adenoids, which had been removed. The jaw was well developed, and the teeth were not crowded; this would seem to show the potent influence of the large tongue in pressing out the jaw into a good arch, and to militate against the view, so often expressed, that the presence of adenoids chiefly determines the shape of the jaw.

Dr. ANDREW WYLIE had seen a young lady, aged twenty, who possessed a tongue longer even than this one. She could bring the tip up over the end of the nose, and was able to bend it backwards into the nasopharynx, where it could be seen on anterior rhinoscopy. This patient had recently had an anæsthetic for a dental operation, and considerable difficulty had been experienced during the operation owing to the falling back of the tongue into the pharynx. He drew the attention of anæsthetists to the occasional presence of this abnormality.

SPECIMEN; UVULA WITH GROWTH ON LEFT SIDE FROM A GENTLEMAN, AGED FORTY-TWO.

BY DR. DONELAN.

First noticed about two years ago as a small papilloma, which gradually became white and warty looking. There was no history or other evidence of syphilis. From time to time a swelling as large as the uvula appeared above and below the papilloma whenever the patient had "a cold," or had made any usual vocal effort. During the last four months this secondary enlargement had been more persistent, and with a progressive increase in the uvula itself there had been constant cough. For some weeks before and on the day the uvula was removed only the papilloma could be seen, but at the instant of cutting the secondary enlargements assumed, and still preserved, the appearance previously observed. The uvula was removed only with scissors to avoid injuring the site of the swelling. A microscopic examination had not yet been made.

RIGHT AND LEFT RECTANGULAR CHISELS FOR REMOVING NASAL WALL OF MAXILLARY ANTRUM, EITHER AS AN INDEPENDENT PROCEDURE FOR THE CURE OF ANTRAL SUPPURATION OR AS PART OF THE RADICAL OPERATION THROUGH THE CANINE FOSSA.

BY DR. DONELAN.

The chisels were designed to cut clean out, without leaving any fragments, a rectangular piece of bone from the inner antral wall.

The PRESIDENT said that on one occasion when he had used a rectangular chisel of another sort, and cut forward with it, the patient suffered for some days with epiphora owing to his having damaged the nasal duct. She recovered from it, but it was an accident likely to ensue unless great discretion was exercised.

Mr. H. TILLEY had seen epiphora follow the operation through the canine fossa. He had tried chisels like Dr. Donelan's some years ago, but had given them up, for, unless they were specially sharpened before each operation, the bone was apt to be splintered and its fragments driven into the antrum. For this reason he preferred an instrument that pulled the bone-fragments forward.

Dr. DONELAN replied that he had been using the chisels for six years. He agreed with Mr. Tilley that they must be sharp. On one occasion one of his chisels had been ground too fine and a piece broke off and was lost in the antrum. Fortunately it came away when the packing was withdrawn. If the opening into the antrum were made sufficiently far back the nasal duct would escape injury.

## MAN, AGED FORTY-FIVE, WITH LARYNGEAL GROWTH.

BY DR. IRWIN MOORE.

Patient has been hoarse for eighteen years, and latterly there had been some stridor. About a month ago, when first examined, the left ventricular band and vocal cord were entirely concealed by what looked like a grey cyst, apparently springing from the laryngeal surface of the epiglottis. On attempting to remove this with Mackenzie's forceps, Dr. StClair Thomson found the growth extremely tough. On removal of the cyst the present condition was revealed, *i. e.* infiltration of the left ventricular band with a curious abnormality of the left arytaenoid. The left vocal cord was now visible. It was healthy and moved naturally. Small portions of the left ventricular band were removed, and under the microscope were found to be simply granulation tissue.

Opinions were invited as to diagnosis.

The PRESIDENT asked whether it was simple granulation tissue, and where the growth arose from? Also, Was the stridor of gradual development? He hoped there would be an opportunity of seeing the case again later.

Dr. IRWIN MOORE replied that at the first examination the laryngeal surface of the epiglottis looked like a cyst. When it was seized by the forceps it collapsed, leaving the present condition. Since the notes had been handed in the infiltration had increased, and the cord was no longer visible. There had been no stridor before the operation. The voice had improved a little since the operation.

## GUMMA OF LARYNX.

BY DRS. DUNDAS GRANT AND DAN MCKENZIE.

In a woman, aged thirty-two. History of gradually increasing hoarseness of three months' duration, followed by difficulty in breathing and stridor. On examination, the left side of the larynx was seen to be swollen, and a conical outgrowth could be made out during deep respiration springing from the left subglottic region. Attempts were made to remove a piece of this outgrowth for microscopical examination, but the forceps could not reach it, and the attempt produced stridor and dyspnoea so grave that, after hurried intubation, a low tracheotomy was forthwith performed under cocaine anaesthesia. The patient was given potass. iodid. gr. x *t.d.s.*, with liq. hg. perchlor., and great improvement in the local appearances resulted. The tracheotomy tube had now been removed and the larynx presented the following appearance: The

left side was red and congested, and at the site of the left cord was a row of granulations of a lively red colour. No trace of subglottic outgrowth remained. Movements were normal. There were no signs in the lungs; no tubercle bacilli in the sputum; and there had been no reaction to Calmette's ophthalmic test. No other indications of syphilis were obtained.

Dr. HILL observed that had the direct method been adopted no difficulty in reaching the growth would have been experienced.

#### A CASE OF CHRONIC INFILTRATION OF THE LARYNX.

BY MR. CHARLES PARKER.

The patient, aged thirty-five, a butcher by trade, had done a lot of shouting in the street outside his shops. Five years ago he began to suffer from hoarseness, which gradually got worse until nine months ago he became voiceless. Five months ago the patient put himself under treatment and his voice had improved to a limited extent. There was a definite history of primary and secondary syphilis at the age of sixteen or seventeen. The patient had taken large doses of iodide of potassium for the last four months with but little alteration in the laryngeal condition.

At the present time there was marked infiltration of the laryngeal surface of the epiglottis extending on to the left arytaeno-epiglottidean fold, giving the parts a pale and almost nodular appearance. There is a huge swelling in the interarytaenoid region extending below the cords, red in colour, and of firm appearance. There is also some infiltration of the ventricular bands, and below the left cord there was a definite pale growth.

The patient was shown from the point of view of diagnosis and treatment.

Dr. LAMBERT LACK said this was only an exaggeration of a common condition. He had seen cases even more marked than this one. The exuberant tissue might be removed with benefit, but the chronic inflammatory condition would recur.

The PRESIDENT thought the case might be called one of syphilitic pachydermia. The swelling was confined exclusively to the interarytaenoid space, and there were several somewhat nodular excrescences elsewhere. He thought the syphilitic factor in the case was a very important one.

Mr. MARK HOVELL looked upon the case as one of chronic laryngitis in a syphilitic subject.

Mr. H. TILLEY said that this type of laryngeal pachydermia and hypertrophy was often associated with fibrosis elsewhere in the body. The liver and kidneys were frequently cirrhotic, and a high-tension pulse was a common accompaniment. Some years ago he had seen a case similar

to this at Golden Square. There was the same large swelling in the interarytænoid region causing dyspnoea, but with rest in bed and purgation the breathing improved, and the patient left the hospital. Some time later he was informed that the patient had died suddenly, and after considerable trouble he obtained permission to make a *post-mortem*. The liver was distinctly cirrhotic. He gave the larynx to Dr. Jobson Horne, who had made a microscopic examination of it, and had utilised the case and the sections as illustrating the teaching that laryngeal hyperplasia was frequently part and parcel of a general fibrotic tendency. He suggested that the case on exhibition might be successfully treated by cautery puncture.

Dr. JOBSON HORNE remembered the case Mr. Tilley had just cited, but he disagreed with Mr. Tilley regarding the interarytænoid swelling. In that case the interarytænoid swelling was much less than in this one. He also differed from Mr. Tilley regarding the use of the electric cautery, the object of which, as we saw in the cautery treatment of tubercular laryngitis, was to produce fibrosis. And they had already enough of that in pachydermia laryngis. He would advise removal of the protuberance. Recurrence would doubtless take place, but it would be small beside the original growth. He had drawn attention to the association of general fibrosis with pachydermia laryngis some years ago.

Dr. DAN MCKENZIE suggested that to a larynx such as this, where the cedema and hyperplasia were so excessive, the term *elephantiasis laryngis* was applicable. Pathologically, there was lymphœdema superimposed upon the round-celled infiltration. It was possible that the treatment of this condition by a lymphangioplasty—draining the swamped areas into the tissues of the neck—might be more successful than the forms of treatment which had hitherto been adopted.

Dr. HILL considered these interarytænoid tumours quite suitable for removal by the direct method. He used the President's forceps straightened out for this method, or those of Dr. Watson Williams. He would expect great improvement to follow the operation.

Mr. FITZGERALD POWELL diagnosed the case as one of pachydermia of an unusual type, following a chronic laryngitis due to syphilis. He drew attention to the presence of the protuberances, not only in the interarytænoid region, but also on the ventricular bands and ary-epiglottic folds. With regard to treatment, he would advise abstinence from alcohol and tobacco, and would give potassium iodide. After a time he would remove the interarytænoid mass with Mackenzie's forceps, as he did not think that Brünning's instruments would be strong enough.

Dr. PETER MCBRIDE drew attention to one feature in the larynx which differed from the usual appearances presented by pachydermia. This was the presence deep down on the left side of a soft mass which was ulcerated. This was the most interesting part of the case.

The PRESIDENT asked whether Mr. Tilley would press the advisability of galvano-caustic puncture in the case: such a measure seemed better in a soft round-celled growth, so as to cause the production of an area of sclerosis. He always had some hesitation in using the galvano-cautery with any vigour in the interarytænoid space. The arytænoid cartilages might be drawn together by cicatricial contraction, and serious laryngeal stenosis might occur. In soft tubercular swellings in the interarytænoid space he had found its discreet use very valuable.

Mr. H. TILLEY said he had advised the use of the galvano-cautery because the mass in the interarytænoid region seemed softer than usual. Mr. Fitzgerald Powell had expressed the opinion that Brünning's tracheo-

scope was unsuitable for this case, but the speaker was sure that all that was necessary to obtain access to the mass was Brüning's tongue spatula.

Mr. C. PARKER agreed with Dr. McBride in looking upon the case as unusual. The hyperplasia was of wide distribution, affecting not only the interarytenoid region, but also the epiglottis, the ventricular bands, and the larynx below the left cord. As to the nature of the disease, he agreed that it was a case of chronic laryngitis influenced by, but not entirely due to, the syphilitic taint. As to treatment, he intended to remove by the direct method the growth below the left cord, as this was responsible for the "wobbly" intonation of the voice. The possibility of recurrence would be kept in mind, as, indeed, it might make the patient worse.

#### CASE OF LARYNGEAL NEOPLASM WITH MICROSCOPIC SPECIMEN OF THE SAME.

BY DR. JOHNSON HORNE.

The patient, a woman, aged sixty-four, was brought before the Section at the meeting held on November 6, 1908. The history of the case was that there had been cough and impairment of the voice, and at times aphonia, since April, 1908. The symptoms were attributed to a cough following influenza. The growth occupied the posterior third of the right half of the larynx; it was situated above the vocal cord and between the ventricular band and the arytenoid region. It hid two thirds of the right vocal cord from view, and appeared to spring from the ventricle or the ventricular band. The surface was moriform in appearance. The right cord moved freely, and so did the left. There was no other lesion in the larynx. A piece of growth projecting beyond the edge of the cord had been removed by Dr. Horne, and a section had been cut at right angles to the surface of the growth for microscopic diagnosis. This section was exhibited. The opinion expressed by Dr. Horne at that time was that the growth was an innocent one and its nature was that of a papilloma. Since the removal of a piece for purposes of diagnosis the excrescence increased in size and a further portion was removed deeply, together with some of the underlying laryngeal tissue for further microscopic investigation. The patient was exhibited again with microscopic preparations with a view of eliciting the opinions of members upon the nature of the growth.

The PRESIDENT asked how long it was since tissue had been removed so that traumatism might be excluded. He thought the case had now an aspect suggestive of malignancy.

Mr. WAGGETT was struck by the resemblance this case offered to one he had recently seen, in which, however, the ventricular band had been

pierced and not hooded by the growth. In his case, also, the growth had looked like a papilloma, and removal had been followed by a recurrence with a secondary malignant tumour in the neck.

Dr. JOHNSON HORNE asked for an early report on the section from the Morbid Growths Committee, in order that he might be guided in the treatment of the case.

#### A TUMOUR OF THE HARD PALATE IN A WOMAN, AGED THIRTY.

BY DR. LAMBERT LACK.

There were gummata on the head and the patient was taking iodide of potash.

The PRESIDENT said he thought it was a physiological swelling at the junction of the four sutures of the palate. He had frequently seen it to a minor extent.

Mr. WESTMACOTT did not think the palatal tumour was gummatous. It reminded him of a bony exostosis in the floor of the nose.

Dr. LAMBERT LACK thought the swelling was inflammatory. He would show the case again at a later date.

#### A LARYNGEAL CASE FOR DIAGNOSIS IN A MAN, AGED FORTY-EIGHT.

BY MR. FURNISS POTTER.

The exhibitor hesitated between malignancy and syphilis. The history was very short—only five weeks.

Dr. DAN MCKENZIE had been unable to see into the larynx. What he made out was what looked like a gumma in the glosso-epiglottic fossa, associated with swelling of an overhanging epiglottis, which prevented an inspection of the larynx. But Mr. Furniss Potter had stated that he could see the larynx and could make out a very much swollen left arytenoid eminence.

Mr. FITZGERALD POWELL agreed with the exhibitor that the larynx could be seen. He suggested that the case was one of tubercle.

The PRESIDENT said the question was whether it was gumma or epithelioma. He understood iodide of potassium had not yet been tried. Mr. Powell's interpretation of the picture was not like his own; he, Dr. Grant, thought the rounded body was the tip of the epiglottis forced back by infiltration, and hiding the entrance to the larynx, the apparent cavity being really an ulcerative excavation in the infiltration. He asked whether palpation revealed the induration characteristic of epithelioma.

Mr. LAMBERT LACK thought immediate certainty as to diagnosis was of little importance, since it was, in his opinion, malignant.

#### GREAT MORIFORM ENLARGEMENT OF THE INFERIOR TURBINAL (SPECIMEN).

BY MR. WAGGETT.



## CASE OF SUBGLOTTIC WEB SHOWN AT THE LAST MEETING.

BY DR. HILL.

Dr. Hill said that at the last meeting many of those present had failed to see the subglottic web. He admitted, however, that "web" was not the proper term to use. It would have been more correct to have called it subglottic hyperplasia occluding the anterior half of the larynx in a syphilitic subject. On that occasion the cords and ventricular bands had been swollen, obscuring the subglottic appearance. He proposed to remove the thickening, but would not dream of doing so by the intra-laryngeal method. He would perform thyro-fissure and keep the halves apart with his splint. If removed in the ordinary way recurrence was absolutely certain. One side only should be cut out through the fissure, or both sides could be cut out and his splint used.

The PRESIDENT said that on the present occasion it answered much more to the description given of it last time than it did previously. He then failed to see it because it seemed to be hidden by infiltrated vocal cords. A web in the larynx was a wedge, not a membrane. Members might have expected Dr. Hill to carry out the surgical treatment of it by means of direct laryngoscopy, which he had advocated so vigorously.

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 ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.
 

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*Saturday, March 6, 1909.*

*President, DR. PETER McBRIDE, in the Chair.*

*Abstract report of proceedings by DR. DAN McKENZIE.*

THE PROBLEM OF VERTIGO: SOME NEW DATA OBTAINED IN A RESEARCH INTO THE FUNCTIONS OF THE SEMI-CIRCULAR CANALS IN RELATION TO MOVEMENTS OF THE EYEBALL IN THE HUMAN SUBJECT (abridged).

BY SYDNEY SCOTT, M.S., F.R.C.S.

Within the last two or three years considerable advances have been made in our clinical knowledge of nystagmus. The phenomena of certain varieties of eye-movement have been noted, and explanations offered, by Purkinje, Flourens, Mach, Brener, Cyon, Cruik

Brown, and more recently by Lee and others, in connection with experimental methods of stimulating the labyrinth of vertebrates, including man. Professor Robert Bárány, of Vienna, realised the value of systematic examination of eye-movement in human clinical otology. His procedures of examination cannot be too well known, for many of his observations have been confirmed by other investigators. I think we may regard Bárány's observations as representing the most valuable contribution to clinical otology which has been made in recent years.

After discussing the history of the subject, Mr. Scott went on to speak of the

*Definitions and Varieties of Vertigo and Nystagmus.*

A person is said to experience giddiness when he has the subjective sensation of movement about an axis in some direction in space, whether he be really moving or not; this sensation may be accompanied or overpowered by a sensation that surrounding objects are moving in some definite direction when in reality they are at rest. All forms of giddiness may be associated with more or less obvious nystagmus. On the other hand, true vertigo may occur without any recognisable nystagmus.

The following are the main varieties of nystagmus (*nustazo*, to nod) of which I shall speak. One group includes those varieties the most noticeable feature of which is that the velocity of movement of the eyeball in one direction is equal to the velocity of movement in the opposite direction, so that a series of to-and-fro excursive movements equal in amplitude and period can be recognised. This variety occurs especially in persons with certain kinds of defective vision, particularly due to opacities in the cornea or other media which interfere with the axis of most distinct vision. Other forms of nystagmus in which the movements may or may not be equal in period are unconnected with the above visual defects, but are met with associated with fine or gross tremulous movements of muscles in other parts of the body. Whether certain forms of nystagmus met with in some cases of insular sclerosis should be included in this class or not I am not competent to say. Nor is it within my sphere to enter into a discussion as to the nature of the above forms of eye-movement. I have had no experience of miner's nystagmus, nor of the nystagmus associated with head-nodding in children. These forms have been mentioned to clear the ground for the labyrinthine variety with which I am especially concerned.

The anatomical data represent a considerable part of my research, upon which all the deductions which I have made have been based.

[Lantern slides of serial sections of the human labyrinth were shown and glass models of the membranous labyrinth were on exhibition.]

*Types of Labyrinthine Nystagmus.—Nomenclature.*

According to the form of extensive movement we shall find it convenient to speak of three main types—namely, horizontal, vertical, and rotatory nystagmus.

The following tables indicate the various methods by which I have obtained the three main types of labyrinthine nystagmus which have been described :

TABLE I.—*Rotatory (counter-clockwise) Nystagmus observable during Attentive Deviation and Fixation of the Eyes to the Right.*

<i>By Thermal Methods.<sup>1</sup></i>					
Cold water irrigation	.	.	Left ear	.	Head erect
Hot "	"	"	Right "	"	" "
" "	"	"	Left "	"	" inverted
Cold "	"	"	Right "	"	" "

<i>By Rotation around a Vertical Axis.<sup>1</sup></i>					
Rotation counter-clockwise	.	.	.	Face directed downwards	
" clockwise	.	.	"	" "	upwards

TABLE II.—*Rotatory (clockwise) Nystagmus observable during Attentive Deviation and Fixation of the Eyes to the Left.*

<i>By Thermal Methods.</i>					
Cold water irrigation	.	.	Right ear	"	Head erect
Hot "	"	"	Left "	"	" "
" "	"	"	Right "	"	" inverted
Cold "	"	"	Left "	"	" "

<i>By Rotation around a Vertical Axis.</i>					
Rotation clockwise	.	.	.	Face directed downwards	
" counter-clockwise	.	.	"	" "	upwards

TABLE III.—*Horizontal Nystagmus observable during Attentive Deviation and Fixation of the Eyes to the Right.*

<i>By Thermal Methods.</i>					
Cold water irrigation	.	.	Right ear	.	Face downwards
Hot "	"	"	Left "	"	" "
" "	"	"	Right "	"	" upwards
Cold "	"	"	Left "	"	" "

<sup>1</sup> For an account of technique adopted by Bárány see Thomas Guthrie's digest, *Brain*, 1906, also McKenzie's abridged translation in *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, vol. xxiv, No. 2.

*By Rotation around a Vertical Axis.*

Rotation counter-clockwise . . . . .	Head erect
" clockwise . . . . .	" inverted

*Note.*—Inversion of the head was conveniently obtained by complete backward extension of the head over the end of a special rotating table, so that the head was about 10 in. from the axis of rotation.

TABLE IV.—*Horizontal Nystagmus observable during Attentive Deviation and Fixation of the Eyes to the Left.*

*By Thermal Methods.*

Cold water irrigation . . . . .	Left ear . . . . .	Face downwards
Hot " " . . . . .	Right " . . . . .	" "
" " " . . . . .	Left " . . . . .	" upwards
Cold " " . . . . .	Right " . . . . .	" "

*By Rotation around a Vertical Axis.*

Rotation clockwise . . . . .	Head erect.
" counter-clockwise . . . . .	" inverted.

TABLE V.—*Vertical Nystagmus observable during Attentive Deviation and Fixation of the Eyes Upwards (in relation to the Orbit).*

*By Rotation Methods.*

Rotation counter-clockwise . . . . .	Right side of head downwards
" clockwise . . . . .	Left " "

TABLE VI.—*Vertical Nystagmus observable during Attentive Deviation and Fixation of the Eyes Downwards.*

Rotation clockwise . . . . .	Right side of head downwards
" counter-clockwise . . . . .	Left " "

*The Physical Effects of Heat.*

[Lantern slide of section of superior ampulla and vestibule.]

It is well known that as water cools the density of the cooler particles increases and they fall.<sup>1</sup> The more rapidly heat is abstracted the more rapidly do the particles fall. I see no reason to doubt that the endolymph possesses the same properties in these respects as other watery fluids, and that when the middle ear and outer wall of the labyrinth are cooled, the perilymph and endolymph may be affected in accordance with the well-founded physical laws. If the temperature of the labyrinth is raised above the body temperature we can readily believe that the phenomena observed are due to ascending convection currents in the endolymph. When the head is erect these descending or ascending currents would pass through the ampulla of the superior semi-circular canal. When the face is

<sup>1</sup> The law applies to ordinary atmospheric pressures, providing the temperature is higher than 1° C.

directed upwards or downwards the currents would pass through the ampulla of the external semi-circular canal.

### *The Physical Effects on Rotation.*

*Inertia of the Particles of Endolymph and of the Fibrillæ.*—At the beginning of all movements of the head the endolymph and the tapered ends of the fibrillæ will tend to remain stationary with respect to space. As soon as the inertia of the endolymph and of the tapered ends of the fibrillæ has been overcome by the frictional resistance<sup>1</sup> between the inner surface of the membranous labyrinth and the particles of endolymph in contact with it and with each other, the endolymph and tapered fibrillæ will acquire the same velocity through space as that at which the head is moving. When the head comes to rest the particles of endolymph will tend to continue their flow until the momentum they have acquired is overcome by the frictional resistance of the particles; the tapering fibrillæ will remain deflected until the forces causing deflection have been overcome by the elasticity of the fibrillæ.

### *Comparison of the Hypothesis of Convection Currents and Momentum Currents*

showed that the type of nystagmus was constant for a current in a definite direction, whether evoked by changes of temperature or by arrest of rotation.

### *Theoretical Data of Rotation.*

Greater effort may be required to provoke nystagmus by rotation in one direction than by rotation in the opposite direction, and some observers hold that each ampullary nerve has a "principal" and a "subordinate" function (Lee,<sup>2</sup> *loc. cit.*; cf. Bárány, *loc. cit.*).

The following reasons appear to me to be opposed to this view; there is good reason to think that greater effort is required to set up momentum currents from the utricle through the ampulla to

<sup>1</sup> The above is better stated in the terms of the physicist as follows: "When a cylindrical or, presumably, an ellipsoidal column of liquid is set moving in a tube, the velocity at different distances from the axis of the tube is well known to vary. The theory was originally given by Poiseuille ("Memoires des Savants étrangers," 1846). In a cylindrical tube the velocity falls off from axis to periphery according to the parabolic law, and in an ellipsoidal tube, when the ellipticity is not very marked, as in the case of the semi-circular canals, this law would not be much departed from." (I am indebted to Dr. Frederick Womack, Lecturer on Physics to St. Bartholomew's Hospital, for this statement.)

<sup>2</sup> Lee, *Journ. of Phys.*, 1893, xv.

the canal than from the canal through the ampulla to the utricle. After the set of semi-circular canals on one side has been removed, it will be found that nystagmus can be produced by less number of revolutions in one direction than are necessary to provoke nystagmus by rotation in the opposite direction.

Viewing the matter physically, in order to estimate the momentum set up by rotation we must pay regard to the angular velocity, tangential speed and duration of rotation. The angular velocity is determined by computing the time of one complete revolution of  $360^\circ$ , and stated as so many degrees per second. If we adopt a uniform angular velocity of, say,  $360^\circ$  in five seconds, the approximate tangential speed varies directly with the distance between the semi-circular canals and the axis of rotation; this distance can be obtained by measuring the radius of the curve of revolution described by the external auditory meatus, which will give the approximate relative position of each set of the semi-circular canals.

It will be obvious that when the patient reclines on the turntable with the head half a metre from the axis of rotation, and the table be turned at the uniform angular velocity of  $360^\circ$  per five seconds, the tangential speed of the head, and therefore of the labyrinth and of the endolymph, will be greater than when the head is only a quarter of a metre from the axis of rotation. Similarly, if the patient be seated over the axis of rotation with the labyrinths equidistant from the axis of rotation, the tangential speed will be equal in the two labyrinths. But if the patient be seated a little to one side of, and not quite accurately over the axis of rotation, so that the labyrinths are not equidistant from that axis, then greater tangential speed will be set up in the labyrinth which is at the greater distance from the axis of rotation. Now, when mass and angular velocity are constant, the strength of the stimulus which depends upon the arrest of the momentum varies directly with the tangential speed. Owing to the inequality of the sectional areas of semi-circular canal and ampulla it will take a different time to establish uniformity of movement throughout the whole body of the endolymph when the head is rotated uniformly in one direction from that which it will take if rotated uniformly in the opposite direction, the current in the one case being from narrow to broad channel and in the other from broad to narrow, the sectional areas of the two portions being as 25 to 1.<sup>1</sup>

<sup>1</sup> I have had the advantage of conferring with Dr. Frederick Womack, Lecturer in Physics at St. Bartholomew's Hospital, in expressing these conclusions.

*Sectional Areas of Membranous Labyrinths.*

Transverse diameter of membranous and bony ampulla	. . .	1.50 mm. to 2 mm.
" " bony semi-circular canal	. . .	0.75 "
" " membranous semi-circular canal	. . .	0.30 "

*The Theory of the Stimulus producing Labyrinthine Nystagmus.*

If we recall the normal circumstances of stimulation of the ampullary nerves by ordinary head-movements, and regard the stimulus as being produced by flexion of the fibrillæ due to inertia of the free ends of the fibrillæ and of the surrounding endolymph, we must regard any stimulation by moving currents as abnormally intense. To produce such currents by rotation greater angular velocity or tangential speed or duration of rotation is required to overcome the frictional resistance of the endolymph in one direction than in the other. But in normal conditions of stimulation by inertia no currents are set up, and the stimulus will be as effective when the head is moved in one direction as when it is moved in the other. This view is not in accord with that of others, who hold that the ampullary nerves possess a "principal" and a "subordinate" function, nor does it agree with those who assume that the stimulus set up by *normal* head-movements in one direction acts more strongly on any one particular crista than the stimulus produced by normal head-movements at the same angular velocity in the opposite direction.

Although I believe there is a double function, I do not believe that one is more potent than the other, for the theory of principal and subordinate functions is opposed to the facts of binocular compensatory movement being preserved, after removal of one set of semi-circular canals on one side.

*Nystagmus associated with Labyrinthine Fistula (Extra-ampullary Lesions).*

Careful consideration of the nature of the stimulus of labyrinthine nystagmus can be applied to explain nystagmus associated with fistulous erosions of the osseous labyrinth, *when the membranous ampullary apparatus is still intact*. For instance, in a case of fistula of the external semi-circular canal which was covered with dry cholesteatomatous material, there was no spontaneous nystagmus. Normal nystagmus reactions were produced by rotation tests and by caloric tests on both sides. Horizontal nystagmus was easily provoked by sudden slight compression of the meatus on the

affected side. Rarefaction of the meatus did not produce nystagmus. Pressure on the fistula with a probe armed with a small pledget of wool produced the same type of nystagmus as produced by meatal compression. The rapid movement was towards the side affected. When the pressure was increased, horizontal and rotatory nystagmus was induced.

The nystagmus in this case appeared to be due to pressure transmitted to the membranous external semi-circular canal, posterior to its ampulla, which would cause deflection of the fibrillæ of the external crista towards the utricle and horizontal nystagmus to the affected side.

In another case of fistula of the external semi-circular canal, the antrum was filled with soft vascular granulation tissue, which covered the fistula. In this case there was spontaneous horizontal nystagmus during attentive fixation of the eyes towards the affected side. The intensity of the nystagmus was increased by sudden meatal compression. The spontaneous nystagmus in this case may have been produced by the transmission of pulsation from the mass of granulations in the antrum over the fistula, through the endolymph of the external canal to the crista of the ampulla, with resulting deflection of the fibrillæ forward towards the utricle.

In cases of fistula of the outer vestibular wall, associated with normally reacting ampullary systems (as ascertained by the nystagmus resulting from caloric tests), spontaneous nystagmus appears to be connected with the presence of vascular granulations in the tympanum.

In a case of fistula of the fenestra ovalis which I described elsewhere<sup>1</sup> there was no spontaneous nystagmus, but vertigo was induced by meatal compression. In cases of vestibular fistula in a normally reacting labyrinth the spontaneous nystagmus, when present, was rotatory in type, or combined rotatory and horizontal; the explanation one offers is that transmission of pulsation takes place from granulations to the endolymph from the utricle towards the superior and external canals. Whether these suppositions will explain all apparently similar cases remains to be seen.

#### *The Relations of the Semi-circular Canals to Normal Ocular Fixation.*

The inferences which I have drawn have led me to regard the ampullary apparatus as the receptive organ of stimuli set up by deflection of the fibrillæ; that under ordinary conditions the

<sup>1</sup> *Lancet*, 1907, vol. ii.



deflection is produced by movements of the head; that the force causing the deflection is due to inertia of the fine ends of the fibrillæ; that the impulses are conveyed by the ampullary nerves to the brain; that these afferent impulses affect among other parts the oculo-motor apparatus; that the movement of the eyeball aids attentive fixation of the visual axes upon an object during movements of the head. Moreover, the direction of eye-movement in any particular plane depends upon the direction of deflection of the fibrillæ in the ampulla in which the stimulus originates. The rapidity and extent of movement of the eyeball varies directly with the intensity and duration of the stimulus. The intensity and duration of the stimulus will vary directly with the rapidity and period of movement of the head.

Thus we infer that there is a perfect correspondence between the direction, rapidity and extent of movement of the eyeball and the direction and period of movement of the head. By this correspondence between head- and eye-movements spatial position of the visual axes is controlled, and we are enabled to preserve accurate attentive visual fixation notwithstanding continual movements of the head.

*Observations on Ocular Fixation during Immobilisation of the Head.*

I shall attempt to show that the primary movement of labyrinthine nystagmus is an exaggeration of this reflex movement which normally controls fixation. But we must first consider what are the normal movements of the eyeball which maintain fixation on moving objects during immobilisation of the head. Last year I presented a paper to the Anatomical Society of Great Britain and Ireland, from which I quote the following paragraph :

“Determination of the functions of the normal labyrinth in relation to the control of normal ocular fixation. . . . Let us first consider what form of eye-movements take place when the head is kept erect and motionless, while the eyes are directed upon a small moving object, such as the end of a pencil, held by an observer about eighteen inches distant from the eyes. The individual under observation is directed to follow every movement. . . . If the pencil is moved from one side to the other within the visual field at a rate not exceeding about 45° per second the eyeballs appear to move regularly and smoothly in adjusting fixation, and the image is kept focussed in the line of most distinct vision. If the pencil or other object be moved more rapidly across the visual

field the attempt to preserve fixation can be seen to fail, for the eyeballs move in obvious jerks in the effort to regain fixation.”<sup>1</sup>

Movements of the eyeball made in the effort to regain fixation on a moving object are called by Dr. Dodge “the movements of pursuit.” His experimental conditions differ from my own, for the photographic method does not lend itself to wide ranges of movement such as I have described, and Dr. Dodge does not demonstrate with the camera what is obvious to the naked eye—namely, that the eye moves in a successive series of short, rapid jerks for movements of pursuit upon objects moving at a greater angular velocity than about  $45^{\circ}$  per second. In explaining what appears to me to be the part played by the simple movement of pursuit in the mechanism of nystagmus, I shall refer to this phenomenon as the “simple reflex action of attentive pursuit.”

#### *Ocular Fixation during Head Movements.*

Let us now consider what happens when the object is at rest and the head is moved while ocular fixation is maintained. This can be ascertained in a normal person who is directed to hold the head erect and to fix the eyes upon an object about eighteen inches away. The head is then turned slowly from side to side as in expressing a negative sign—*i. e.* the head is rotated from side to side around a vertical axis through about  $90^{\circ}$ . When the head moves at the velocity of  $45^{\circ}$  per second perfect fixation is preserved without effort; and it will be found possible to increase the velocity of movement of the head from side to side up to  $90^{\circ}$  per second and even  $180^{\circ}$  per second and still maintain ocular fixation, unaccompanied by any jerking movement of the eyes.

Perhaps it is not necessary to say that those movements depend upon normal visual powers. What has been said regarding ocular fixation on objects moving horizontally can be applied to fixation on objects moving vertically. Similarly the observations on fixation during lateral movements of the head may be applied to fixation during nodding movements.

Moreover, it is known that, when the eyes are fixed upon an object at rest and the head is flexed slowly to one side, the eyeball

<sup>1</sup> I communicated this observation to Dr. Henry Head, who told me of a paper about to appear in the November number of *Brain*, which was in the press, in which the authors described movements of the eyeball during immobilisation of the head, illustrated by records obtained by photo-chronographic methods. See “An Experimental Study of the Ocular Reactions of the Insane from Photographic Records,” by Dr. Allen Ross Diefendorf and Dr. Raymond Dodge, *Brain*, 1908, Part 123, xxxi, p. 451.

is maintained, within certain limits, in the original position in space by rotating in a direction opposite to that of the head. In other words, the inclination of the horizontal meridian of the eyeball, which lateral inclination of the head would produce, is corrected by a compensating rotatory movement of the eyeball about its antero-posterior axis in the opposite direction. As the lateral flexion of the head increases, the limit of ocular adjustability to maintain constant fixation is soon reached, and the eyeball rotates with a rapid jerk in the direction of inclination.

*Synthesis of Labyrinthine Nystagmus ; Theory of its Mechanism.*

We can now endeavour to show that the simple reflex action of attentive pursuit is the secondary of the two movements which constitute labyrinthine nystagmus. The primary movement of nystagmus is an exaggeration of the normal reflex movement of labyrinthine control, and is produced in response to a stimulus so intense that the eyeballs are deviated to their extreme limits. When the stimulus originates in one ampulla only, the eyeballs are deviated reflexly in one direction, in which position there is no nystagmus. If an attempt be now made to turn the eyes attentively in the opposite direction away from the direction of deviation, the reflex movement of deviation overcomes the movement of attention (vicious control), and gives rise to a succession of fleeting images sweeping across the retina, and an impression of objects moving rapidly towards the other side. The simple reflex action of attentive pursuit now comes into play, and the eyes are rapidly jerked in pursuit of the apparently moving object, which is momentarily fixed ; immediately labyrinthine reflex deviation gains the upper hand, images once more flee across the retina, causing once more the simple reflex action of attentive pursuit ; and so on until the labyrinthine stimulus and the reflex deviation cease, when the nystagmus comes to an end. But this does not explain all. Associated with these alternating reflex acts is a whole series of psychical impressions ; and, moreover, they are in turn accompanied by impressions connected with the whole musculature of the body.

*The Crum-Brown Theory of Paired Canals.*

Professor Crum-Brown's original description of the impressions arising from the paired canals led him to conclude that "one canal can . . . be affected by and transmit the sensation of rotation about one axis in one direction only, and for complete perception of

rotation in any direction about any axis six semi-circular canals are required, in three pairs, each pair having its two canals parallel (or in the same plane) with their ampullæ turned opposite ways.”<sup>1</sup> While agreeing with the anatomical facts as stated by Crum-Brown, it seems to me that a modification of his views is necessary to explain the functions of the canals. In the first place, one set of semi-circular canals on one side can perform the functions of two sets of canals with very little loss of precision, as shown by the results of destruction by disease or operation of one labyrinth. In the second place, the results of rotation in the plane of, and in planes adjacent to, that of either remaining posterior semi-circular canal cause vertical movements of the eyes, whether the direction of movement of the head is such that the ampulla moves first or last. Also when the rotation is made in the plane of the remaining superior semi-circular canal the ocular movements are purely rotatory and about the anterior posterior axis of the eyeball. When both sets of semi-circular canals are intact, movement of the head by rotation in the plane of the  $\frac{\text{right}}{\text{left}}$  superior semi-circular canal and in the plane of the  $\frac{\text{left}}{\text{right}}$  posterior canal simultaneously causes combined vertical and rotatory movements of the eyeball, compensatory to the direction of movement of the head, for this direction of movement of the head in the plane of one superior semi-circular canal and of the opposite posterior semi-circular canal can be resolved into component sagittal and lateral vertical planes. According to the Crum-Brown theory one only of the paired canals is stimulated. It seems to me that each paired canal is stimulated during movement of the head in planes coinciding or nearly coinciding with the plane of the canal; that when one set of these canals on one side has been completely destroyed, the other set is capable of controlling compensatory movements of the eye, although there will not be quite such precise control in certain limited direction of head-movement, viz. in mathematically exact planes of either the remaining superior or posterior canals. Thus instead of combined vertical and rotatory movements of the eye during attentive fixation resulting from head-movements in the exact plane of the posterior canal, or at right angles to the crista of the inferior ampulla, only vertical eye-movements occur; and during head-movements in the exact plane of the remaining superior canal or at right angles to the crista of the superior ampulla only rotatory eye-movements are produced. During ordinary circumstances the individual may lose little or

<sup>1</sup> *Journ. of Anat. and Phys.*, 1874, p. 330; also quoted by Ferrier, “The Functions of the Brain,” 1876, p. 59.

nothing as regards compensatory power of eye- and head-movement after one set of semi-circular canals has been removed. Under certain circumstances the loss of one set of semi-circular canals interferes with compensatory eye-movements; this occurs when unilateral ablation of one labyrinth is associated with persistent spontaneous nystagmus and giddiness.

*Spontaneous Nystagmus following Complete Destruction of One Labyrinth.*

After recent destruction of one labyrinth in the adult human subject spontaneous nystagmus is generally present at some time or other, and presents the usual characteristics of labyrinthine nystagmus, provided one labyrinth remains functional. When present the nystagmus varies in intensity from time to time. It may either be rotatory, or combined rotatory and horizontal, or combined rotatory, horizontal and vertical (rotatory and oblique). I have never seen pure vertical nystagmus as an isolated type of nystagmus in cases of unilateral ablation, nor pure horizontal nystagmus alone; the rotatory element has been invariably present, and in the slighter cases rotatory nystagmus occurs alone. In some persons giddiness and nystagmus are very severe, and occur upon attentive deviation of the eyes to either side. In other cases giddiness and nystagmus are well marked when the eyes are attentively turned towards the normal side. Lastly, there may be no spontaneous nystagmus after unilateral ablation, even although nystagmus reactions can be obtained by rotation and by caloric stimulation of the intact labyrinth.

*The Effect of Removal of all Six Semi-circular Canals (Bilateral Ablation).*

I have only seen one case of bilateral ablation of the labyrinth—Mr. Lake's classical case of extirpation of both internal ears.<sup>1</sup> Through his courtesy I have been enabled to examine this patient on the rotation table. In spite of twenty continued revolutions around a vertical axis with the head placed 20 inches from the axis of rotation (face upwards) at the angular velocity of  $180^{\circ}$  per second (which represents a relatively enormous tangential speed) no nystagmus developed, no giddiness was felt; the patient got up immediately, unaided, without the least sign of discomfort of any

<sup>1</sup> *Proc. Roy. Soc. Med.*, 1908, vol. i (Otolological Section), p. 150.

kind. Her reactions of simple attentive pursuit, as indicated by eye-movements in fixing moving objects during immobilisation of the head were obviously more acute than in a person with normal labyrinths. This was several years after the removal of the labyrinths. Although fixation of pursuit during head movements was astonishingly good, it was imperfect.

*A New Hypothesis to explain Unilateral Ablation Nystagmus.*

To uphold a new hypothesis the following features of spontaneous unilateral ablation nystagmus appear to be the most important. That it is absent after the removal of the labyrinth in young subjects; that when present after recent ablation in young adults with normal vascular systems it is generally slight; that in my experience, when carefully looked for, it has been found to accompany recent ablation in persons after about thirty-five years of age.

When very severe the nystagmus is rotatory in type to one side and oblique or horizontal to the other. The rotatory movement has always been a fine movement clockwise, best seen on attentive deviation of the eyes to the left, or counter-clockwise on deviation to the right of the binocular field, and is best observed upon attentive deviation towards the normal side. The horizontal or oblique nystagmus has been observed when the eyes are attentively deviated towards the side of the removed labyrinth. The horizontal and oblique movements have a wider range than the movement of rotatory nystagmus. I think we may regard the oblique movement, which is directed obliquely downwards and towards the side of attentive deviation, as being composed of horizontal and vertical elements, the latter being directed vertically downwards—that is to say, we have three elementary types of labyrinthine nystagmus which correspond to those produced by stimulation of the three ampullæ. In the course of time this spontaneous nystagmus becomes less marked. The first element to disappear is the vertical element, so that we witness a stage in which there is rotatory nystagmus to one side and pure horizontal nystagmus to the other. At a later period the latter disappears, and rotatory nystagmus remains alone. This is the type of nystagmus most commonly seen. It is sometimes so slight as to be overlooked, and occurs on attentive deviation only to one side, which aids its recognition. It may disappear and recur during intervals extending over a period of several years, *e. g.* four years. In some cases, in which it seems

to have disappeared, it may be may to re-appear by over-exertion, and by certain other circumstances.

If we analyse the above composite type of nystagmus we shall conclude that the nystagmic movements are the same as those produced by stimuli which cause deflection of the fibrillæ of the ampullary cristæ in the normal labyrinth from the utricle towards each of the three semi-circular canals simultaneously (see Tables).

*The effect of immobilising the head on the nystagmus* was tried in several patients with well-marked ablation nystagmus, but in no instance was the nystagmus arrested. The patients were kept at rest on a wooden couch in a room with concrete floor for periods of fifteen to thirty minutes, with the head between sandbags.

*The Influence of Bodily Rest without Immobilisation of the Head.*—In some cases in which there was slight unilateral nystagmus bodily rest was followed by disappearance of the nystagmus, even when the head was not immobilised. In these cases there had been some hurried movements or apparent mental excitement on the part of the patient before the effect of rest was noted.

*The Influence of Muscular Exertion.*—In certain cases of recent unilateral ablation, in which there was no spontaneous nystagmus at the time of examination, I found it possible to provoke rotatory nystagmus towards the normal side by exercise, which caused the heart-beat to increase in frequency from about 80 to 100 or more beats per minute. After a few minutes' rest, during which time the heart-beats returned to the normal, the nystagmus disappeared. In other cases with slight spontaneous rotatory nystagmus to the sound side, muscular exercises which caused increased force of the pulse were followed by additional horizontal nystagmus to the ablated side. In another case with spontaneous rotatory nystagmus to the sound side, and horizontal nystagmus to the ablated side, muscular exertion was followed by conversion of pure horizontal nystagmus to the ablated side into oblique nystagmus downwards and to the same side.

I cannot conceive that the changes in the type of nystagmus which followed exercises of the arms can be attributed to changes in the nerve-fibres of the labyrinth which had been destroyed, and although I have not studied Wallerian degeneration in the auditory nerve, I feel justified in assuming that the effect of exertion must be sought for in the *normal labyrinth*.

*The Influence of Carotid Pulsation.*—The internal carotid artery runs through the carotid canal of the petrous bone below and in front of the cochlea, where it makes a somewhat abrupt curve

forwards and upwards. It needs little imagination to realise that if the heart-beat is sufficiently strong, or if there is sufficient deficiency of elasticity in the walls of the artery, some of the force of the heart-beat may be imparted to the walls of the carotid canal and may reach the labyrinth in the form of an impaction wave.

In order to ascertain whether the increased nystagmus could be attributed to the direct influence of carotid pulsation, the carotid arteries were compressed first on one side and afterwards on the other. When the common carotid artery was compressed against the cervical vertebrae on the side of the labyrinth which had been destroyed, no influence on the nystagmus was observable in eight successive patients with spontaneous ablation nystagmus. But when the common carotid artery was compressed on the side of the normal labyrinth, the nystagmus was completely arrested in each case. As long as the compression was continued nystagmus was absent, and when the artery was released the spontaneous nystagmus returned. Moreover, patients told me that they lost all sensation of giddiness during carotid compression.

*The Hypothesis of Impaction Waves as the Cause of Spontaneous Ablation Nystagmus.*—If such a wave as that which I have suggested exists, it should be imparted to the petrous bone where the internal carotid artery make its forward curve, and should traverse the narrow capsule of the labyrinth which intervenes between the labyrinthine fluid and the walls of the carotid artery. The direction of its transmission would be chiefly upwards and backwards, from the convex arch of the carotid canal. In this direction the wave would traverse the vestibule and the semi-circular canals. We should suppose that the most constant waves would travel across the utricle towards the ampulla of the superior canal, and would divert the tapered extremities of the fibrillae upwards. If the impaction wave were sufficiently strong it would affect the ampulla of the external semi-circular canal, and the wave would not reach the inferior ampulla, unless the force of impaction were unusually vigorous. Now, if such impaction waves do actually exist, and if they act in the way I have suggested, the fibrillae of all three ampullae would be simultaneously deflected from the utricle towards the canals, and the resulting nystagmus would be rotatory towards the stimulated side, horizontal towards the non-stimulated side, and vertical downwards (that is, oblique downwards and towards the non-stimulated side). And this is the type of nystagmus which lasts for several weeks, after one labyrinth has been extirpated in adults who have unusually forcible pulsation of the carotid artery.



*Application of the Hypothesis to a Case of Long-standing Unilateral Defunct Labyrinth.*—Assuming such waves do exist, it is interesting to consider the possible effect on the eye-movements of forcible carotid pulsation. A case came under my observation. A man aged about sixty had had suppurative disease of the left middle ear fifty years previously, which had left him totally deaf to bone-conduction on that side. The inner tympanic wall could be distinctly seen. The effect of heat and cold to the left tympanum produced no nystagmus and no giddiness whatever; the other ear was normal as revealed by hearing and thermal tests. Thus it seemed that the internal ear on the left side was defunct, and that the right internal ear was normal. There was no spontaneous nystagmus, and its absence could be explained either by the absence of impaction waves or by the acquired disregard of impaction waves. Assuming that this patient's right labyrinth had for many years been subjected to the shocks transmitted to it from the internal carotid artery, the fibrillæ of the superior semi-circular canal would be constantly deflected upwards, causing a stimulus which the patient had learnt to disregard. If this be the case, and the impaction waves be suddenly cut off by compression of the right common carotid artery, the effect on the labyrinth in removing the stimulus should be the same as that introduced by a stimulus of the opposite kind, namely, *relatively* downward reflection of the superior fibrillæ, and we should expect rotatory nystagmus, clockwise in direction, to appear during carotid compression upon deviation of the eyes to the left—that is, away from the “stimulated” side. Now, it is a most remarkable fact that this was the actual effect of compressing the right carotid artery in this man. There was no giddiness and no spontaneous nystagmus on attentive deviation of the eyes in any direction before the carotid artery was compressed, but directly the artery was compressed so as to cause disappearance of the pulsation in the superficial temporal artery, the patient became giddy, rocked about in his chair, and rotatory nystagmus, clockwise in direction, appeared upon attentive deviation of the eyes to the left side. These observations were repeated and the results were constant, and were witnessed by others present at the time. (Comparison of the left common carotid artery produced no such effect.)

#### *Conclusion.*

It is not wise to make any premature generalisations, and I am content to record the facts as I observed them that they may be

tested independently by others. If my observations can be substantiated by competent observers in similar cases of unilateral ablation of the labyrinth, I think some new data with which to re-consider the problem of vertigo and the mechanism of nystagmus may be obtained.

And I think it may possibly be found that various forms of nystagmus hitherto unassociated with labyrinthine stimulation bear such a striking resemblance to labyrinthine nystagmus that it is difficult to dissociate the causes of these forms of nystagmus from those which are acknowledged to be connected with stimulation of the semi-circular canals.

Lastly, I bring these observations forward with the hope that any discussion which they may arouse will lead to a conception of more definite views of the origin of vertigo in cases of atheroma; the causes of giddiness produced by digital compression of the carotid artery<sup>1</sup> and like conditions, and I hope that my remarks will not be considered useless in considering the more precise indications and contra-indications for the operations which have been designed for the relief of vertigo.

Sir VICTOR HORSLEY said he had frequently enjoyed the hospitality of the Section of Otology before, but never so much as on this occasion, for he looked upon Mr. Scott's paper as the paper of the year. He was grateful for the work which had been done on the subject, since it enabled us to make a differential diagnosis between nystagmus due to a peripheral and that due to a central lesion. In approaching the subject of the effects of peripheral stimulation on the vestibular system, he had been struck by the prominence given to nystagmus. But this was not the only motor effect. The other consisted in the attitude of the head, which, during the stimulation, sank to the same shoulder—a phenomenon quite as important as nystagmus. The absence of nystagmus after removal of the labyrinth in children was remarkable, in that a similar effect followed when the labyrinth was removed in monkeys. In those animals the head sank until the vertical axis of the nose was almost horizontal, and nystagmus was only present during the first twenty-four hours. In comparing the results of experimental central removal with those of peripheral removal, he had found that in the former one eye, and in the latter both eyes were affected. He asked whether any hypertonus of one side of the body had been observed after removal of one labyrinth. The question of compensation after destruction of the end-organ was of great interest. He had never seen Mr. Lake's case, but in monkeys the sinking of the head that followed removal of one labyrinth was replaced by a restoration to the

<sup>1</sup> Since this was written I have turned to Jacobson's "The Operations of Surgery," ed. 4, p. 585. In speaking of the treatment of carotid aneurysm he quotes from the "Encyclopedia of Surgery": "If pain, vertigo, sickness, etc., prevent a fair trial of digital pressure . . ."; Erichsen's "Science and Art of Surgery," ed. 10, ii, p. 176, "Cerebral symptoms" arise in 25 per cent. of cases of ligature of common carotid artery; 'twitching and giddiness' are recognised among these 'cerebral' symptoms."

normal position when the other labyrinth was removed. He looked upon this phenomenon as confirming Mr. Scott's carotid theory. He expressed his disagreement with the theory which ascribed the nystagmus, etc., after removal of one labyrinth to a continual stimulation of the affected side, because nothing like this had ever been proved. The continual irritation of a nerve could not be kept up. He concluded by expressing his gratitude to Mr. Scott for the work he had done on the subject.

MR. WAGGETT associated himself with what Sir Victor Horsley had said. Regarding the hypertonus of one side of the body during labyrinthine stimulation, he quoted the classical instance of the unskilful golfer, who, in swinging for his drive, fails to keep his head steady, the result being that the head moves to the left, stimulating the left labyrinth and producing hypertonus of the right leg, which induces a ducking of the knee and a failure to strike the ball.

DR. ALBERT GRAY remarked that the scope of the paper was very wide. In all questions of labyrinthine stimulation the term "acceleration" (of the endolymph) should be used instead of "velocity," because when a body was moving all particles composing that body moved in unison, the heavier particles only being left behind. He considered that the question of nystagmus was one of evolution. In the porpoise, *e.g.*, he had been struck with the small size of the semi-circular canals, and associated this condition with the fact that the porpoise was unable to move its head. Mr. Scott had ascribed the continuance of nystagmus after removal of one labyrinth, in people over thirty-five years, to the increase in the arterial pulse which appeared at middle age, but the speaker suggested that there was another factor. At thirty-five degenerative changes began in the neurones; previous to that age there was an evolution in the neurone, after it an involution.

DR. DAX MCKENZIE expressed his gratitude to Mr. Scott for his paper and proceeded to criticise it in detail. He observed that in his historical survey Mr. Scott had omitted the name of Ewald, although all the theories which had been propounded to account for labyrinthine nystagmus were ultimately based upon the results of Ewald's experiments. In his explanation of rotation-nystagmus Mr. Scott had cited the results obtained by thermal stimulation in support of the inertia theory, and, on the other hand, other observers explained the thermal nystagmus by the results obtained from rotation experiments. But a mutual support of each other by these theories was unnecessary, since both were founded upon Ewald's work. Regarding the explanation of rotation-nystagmus the speaker divided into two classes objections which might be levelled against the theory that the nystagmus was caused by the circulation of endolymph. In the first class came the physical objections, some of which were as follows: The difficulty of understanding how the endolymph could circulate freely round a canal, the diameter of which was only 3 mm., and pass through the utricle at the same rate. For these reasons it was hard to accept the explanation that the nystagmus began when the endolymph movement began, was reversed when it was reversed, and stopped when it stopped. The second set of objections had been raised by Bárány, who had found that the nystagmus after rotation varied in duration not only in different people but also in the same person from time to time; that the duration of nystagmus was not proportionate to the speed and duration of rotation; and that there occasionally appeared a nystagmus in the reverse direction after the disappearance of the first type of after-nystagmus. For these reasons the speaker agreed with Bárány in adopting Abel's nervous theory, which referred the various phenomena

of nystagmus to the hyperexcitation of the neurones of Deiter's nucleus, initiated by the unwonted stimulation of the end-organ in the canals by the movement of the endolymph. Some movement there must be, but the nystagmus was not entirely dependent upon the amount of movement. The speaker asked if Mr. Scott had employed Bárány's method of estimating the duration of nystagmus, and referred to the definite pronouncement of the latter observer that after destruction of one labyrinth, the after-nystagmus towards the normal side was much more prolonged than that towards the affected side. The speaker also alluded to Ewald's discovery that the movement of endolymph from the canal to the utricle of the external canal caused a more decided reaction than when its direction was reversed, while the opposite held good regarding the superior and posterior canals. Turning to the results of caloric stimulation, the speaker had failed to obtain an invariable reversal of the nystagmus when the patient was inverted as both Mr. Scott and Bárány had reported. He occasionally obtained it, but not with the uniformity that characterised the thermal reaction in the erect position. For this, and other reasons, he suggested that the caloric nystagmus might be partly, if not entirely, due to the effect of change of temperature on the nerve-endings in the ampullæ. He expressed agreement with Mr. Scott in his explanation of the mechanism of nystagmoid ocular movements. The carotid pulse theory seemed to account for phenomena previously unexplained, but certain difficulties had occurred to him, one of which was the absence of vertigo and nystagmus when one carotid was compressed in healthy people. Referring to the case quoted by Mr. Scott of fistula in the external semi-circular causing nystagmus to one side, he noted that this symptom was unusual and asked for further details of the case. He further thought that it would materially simplify the hard task of grasping detail if all writers on the subject used the same terminology, and suggested that the term "after-nystagmus" might be employed always for "nystagmus" in speaking of nystagmus after rotation. Finally, he expressed the hope that at an early date the Section would have an opportunity of discussing labyrinthine nystagmus from the clinical standpoint.

Mr. WHITEHEAD, referring to miner's nystagmus, drew attention to what had been termed "complete rotatory nystagmus." He had observed that in these cases the eyeball was not completely rotated, but only half rotated. He had at present under his care an interesting case in which there were nystagmus, vertigo, and vomiting. Nystagmus to the right could be elicited with clonic movements of the right arm and right leg. Regarding Mr. Scott's carotid pulsation theory he had tested it in two cases: in one, with physiological nystagmus, compression of the artery perhaps stopped the nystagmus; in the other, with pathological nystagmus, no change resulted. He referred briefly to the nystagmus and head-nodding in children.

Mr. MACLEOD YEARSLEY said that he was glad Dr. McKenzie had drawn attention to the impossibility of movements in the endolymph. The matter had already been discussed by Professor Yves Delage in the *Arch. de Zoologie* for 1900. Delage pointed out that the canals were practically capillary tubes, and he supported his contention that circulation of endolymph was not possible in them by the fact that in the elasmobranch fishes, whose canals are of much greater calibre, the endolymph is replaced by a gelatinous substance. Delage also has a well-supported theory that the canals are co-operant, but the lateness of the hour did not admit of giving a sufficient description of his theory.

Mr. WEST said that he had been so closely associated with Mr. Scott that he was familiar with his methods, and had been able to confirm personally practically all his results. Any remarks made by him would, therefore, be from the standpoint of a frank acceptance of the clinical observations detailed in the paper. He was a whole-hearted adherent of the theory of flow as the essential feature in the production of the stimuli; a great mass of evidence converged upon the truth of this assumption. It was rather with the more precise mechanism of the production of flow that he desired to attempt to deal. If an isolated canal were considered it was obvious that the flow through it depended on a difference of pressures at the two ends of the canal in all cases; such a difference could be brought about by movement of the canal in a circular path, but not in a straight one, as instanced by the absence of vertigo and nystagmus after stoppage of movement in a straight line forwards. The essential factor of difference in these two conditions was the fact that in the former case the velocities, and hence the changes of velocity, were unequal at the two ends of the canal, in the latter equal. He thought that Mr. Scott's assumption that the strength of the stimulus varied directly with the radius of rotation of the canal, as a whole, was a correct one, though he was inclined to quarrel with the mathematical grounds on which he based it. Mr. West took objection to the statement that the time of rotation required to establish uniform motion throughout the whole mass of the endolymph varied with the direction of rotation; it was demonstrable mechanically that this could not be so. But the duration of rotation necessary to produce on its cessation the minimal stimulus which would provoke nystagmus was certainly different in the two directions, as a fact of every-day clinical observation. He thought the explanation was very simple; the strength of the stimulus might be assumed to be directly proportional to the angle of deflection of the hairs on the ampullary crest, and this would be determined by the velocity of the endo-lymphatic current striking across them. At any given rate of acceleration, positive or negative, the quantity of fluid passing through any cross-section of a canal would be the same, but when the flow was issuing from the narrow canal into the wide ampulla there was created a fluid vein which shot across the hairs at relatively high velocity, producing a corresponding deflection; when the flow was through the wide ampulla into the canal, there was a relatively uniform movement across the whole wide section of the ampulla at a correspondingly lower rate and with a correspondingly slight deflection. Mr. West did not believe that the inertia of the hairs themselves entered appreciably into the question of their deflection in any circumstance of movement of the head, however short. The density of the hairs must be sensibly the same as that of the surrounding fluid, and hence the independent movement of the hairs apart from that of the fluid was very unlikely to occur. He thought relative movement of the fluid within the canal was always present as the cause of deflection, and would point out that for the case of the stimulus produced by accelerating movements this slip of the endolymph was produced instantaneously, and was at its maximum at the instant of commencement of the movement of the head, from which time it steadily declines in strength. Flow was at its greatest at the precise moment when it was supposed to be absent, in the short-lived, rapid movements of the head of every-day life.

Mr. DAVIES asked whether nystagmus caused vertigo, or *vice-versa*.

Dr. PRITCHARD said that it should be remembered that although the semi-circular canals were very small the cilia were exceedingly fine, and could therefore respond to the slightest movement of the endolymph.

Dr. DUNDAS GRANT said it did not seem by any means obvious to him that the impulse conveyed from the semi-circular canal towards the ampulla should be more vigorous than that from the utricle towards the ampulla. He would have thought that in view of the greater bulk of fluid and the larger space in which it could move, there was a stronger impulse conveyed from the utricle towards the ampulla. The orifice of communication between the utricle and ampulla was also enormously greater than that between the canal and ampulla, and, moreover, the minute calibre of the canal seemed to him to exclude the possibility of any marked flow taking place in it. He thought that the impulse from the utricle to the ampulla would account for some of the phenomena which had been described; for instance, the composite spontaneous nystagmus after unilateral labyrinthectomy seemed to be the same as that produced by pressure conveyed from the utricle to the ampulla. The result of pressure on a fistula in the semi-circular canal behind the ampulla also supported this opinion. He suggested that the effect of quinine and salicylates upon the labyrinth should be tested by carrying out some of the experiments mentioned, before and after the administration of these drugs to patients, as helping to decide the question as to the anodyne action of these remedies on the nerve mechanism of equilibration.

The PRESIDENT congratulated Mr. Scott upon his excellent paper, and the Section upon the interesting discussion. There were one or two points he wished to refer to. He suggested that the difficulty in obtaining vertical nystagmus might be accounted for on the Crum Brown theory that the posterior canal of one side corresponded to the superior canal of the other. He suggested that the subjective movement of external objects was one of great interest and would repay study. He had often wondered what the connection between audition and the vestibular sense was. It was a curious circumstance that the end-organs of the vestibular nerves were situated in such close proximity to those of hearing. With regard to caloric nystagmus, surely Bárány's theory was anomalous. Could it really be believed that the labyrinth was cooled or warmed by water in the meatus. He would rather believe that the nystagmus following cold, for example, was due to some subsidiary effect of the change of temperature. He asked if Mr. Scott could explain the nystagmus got in a railway train when looking out at external objects.

Mr. SCOTT, in reply, thanked the Section for the reception accorded to his paper. He warned those experimenting with the labyrinthine test not to permit the patient to deviate the eyes beyond the limits of the binocular field, lest physiological nystagmus occur. He pointed out that the distinguishing feature of labyrinthine nystagmus was that it was always asymmetrical. Regarding the endolymph movement, he had found by experiment on his glass models that particles suspended in the water were driven by rotation in the direction indicated in his paper. The different results which had been obtained by rotating an individual in different directions were supposed to indicate that each labyrinth had a principal and a subordinate function. In reply to Sir Victor Horsley, he said that he had observed forced movements, not only of the head, but also of the body, but only when the nystagmus was very violent. He thought that under ordinary circumstances the fibrillæ in both labyrinths moved and then stopped. If there was a strong deflection as in rotation it was, he thought, due to endolymph currents, as his models showed. In reply to Dr. McKenzie, he preferred to talk of "nystagmus after rotation" rather than of "after-nystagmus." He agreed that at first sight it was

difficult to realise that there could be a free current through the narrow semi-circular canals, but it was instructive to see alongside the canal capillary vessels much smaller than the canal, and yet through these flowed the blood freely enough. As to Dr. McKenzie's inability to substantiate Bárány's results from the thermal tests the speaker could sympathise, but he thought that if the head was properly inverted nystagmus in the two directions—rotatory and horizontal—would be obtained, indicating the stimulation of the superior and external canals. He also had, so far, failed to obtain vertigo and nystagmus from compressing one carotid artery in healthy people, but he did not despair of finding a certain percentage of people who would show it. In reply to Dr. Dan McKenzie's question as to the different effects of rotation, whether only one labyrinth or both were intact, Dr. Scott referred to two statements in his paper which appeared to have been overlooked, and which indicated that he agreed in these particulars with Bárány. As regards timing the duration of nystagmus, he did not dwell upon this as provoked by the caloric tests, and in regard to the rotation tests he paid more attention to the minimum velocity or least time of duration of rotation (assuming the arc of rotation and angular velocity are constant) than to the duration of nystagmus evoked, for providing that the nystagmus was sufficiently intense and prolonged to be recognisable, the diagnosis of lateralisation was more certainly established by the results of all the tests together than by the differential time test alone. In reference to the state of the other ear in cases referred to under "Nystagmus associated with labyrinthine fistula, etc.," the cases there referred to had all been completely examined as regards inspection of both ears, tuning-fork tests, rotation and caloric examination with neurological survey. The other ear and cerebellum presented in all particulars normal signs. As regards indications for operation he left this for further discussion. Dr. Scott was in agreement with Dr. Gray with regard to "acceleration," for he used the expression "at the *beginning* of movements" and "on the *arrest* of movement," which was, of course, acceleration or retardation of velocity. He maintained that the physical explanations of the results of rotation offered exceeding great difficulty, and that glass models were only useful topographically and not for physical examination. In reply to Mr. Whitehead, he said he had had no experience of miners' nystagmus. In the ordinary rotatory forms of nystagmus he had observed that the excursions were very small. The cases of "cross nystagmus" shown at the Neurological Section at times were cases in which rotatory nystagmus to one side was combined with horizontal nystagmus to the other. He thought that much work remained still to be done in the associated movements. Mr. Davies had asked whether nystagmus caused vertigo or *vice-versá*; as a matter of fact they were independent of each other. He agreed with Dr. Grant that useful work could be done by testing cases while under the influence of drugs like quinine, salicylates, etc. In replying to the President, Mr. Scott explained the "movement of pursuit" by saying that the eye caught sight of the objects revolving past it and fixed one of them. He had heard from an individual who had had experience of the "knock-out blow" while boxing that the vertigo which follows that injury was associated with nystagmus, and was obviously due to an injury to the labyrinth. The nystagmus observed in trains was due to the fixation by the eyes of some passing object beside the line, such as a telegraph post, etc.

*Addendum to Abstract of Proceedings of February 6, 1909.*

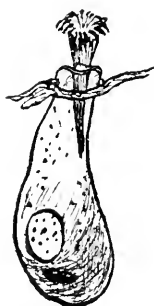
Mr. Sydney Scott has favoured us with the following remarks to supplement the report of his reply as given on page 148.

SERIES OF LANTERN SLIDES OF MICRO-PHOTOGRAPHS OF SECTIONS OF  
THE HUMAN ORGAN OF CORTI.

BY MR. SYDNEY SCOTT.

The specimens had been obtained within a short time of death. Some had been fixed in Zenker's fluid and some in Flemming's strong solution. They had been embedded and cut in paraffin wax. The micro-photographs were taken by Dr. Albert Norman.

FIG. 1.



$\times 1000$

FIG. 2.



$\times 1000$

FIG. 1.—Represents Mr. Scott's interpretation of the microscopic appearances of one of the outer hair-cells.

FIG. 2.—Represents the appearance of one of the tufts of fibrillæ of one hair-cell viewed from above.

One of the specimens illustrated the tunnel of Corti in radial section. Across the tunnel a single beaded nerve-fibrilla could be seen to span apparently from the outer to the inner pillars of Corti.

The exhibitor observed that he had obtained very few sections in which it was possible to distinguish nerve-fibrils in the tunnel. His investigations had been restricted to the human subject, but he understood that others had found less difficulty in displaying the arrangement of the nerve-fibrils in the tunnel in the cochlea of lower animals. The principal specimens of the series showed the second coil of the cochlea with the organ of Corti in radial sections, and a complete longitudinal view of the hair-cells and their fibrillæ. The specimens were magnified 270 and 1000 diameters. The cells could be seen to consist of a body, containing the nucleus,



and a neck, which projected through and formed a small collar-like elevation above the membrana perforativa. The fibrille or "hairs" protruded from what looked like the upper opening of the hair-cell, in the form of a wisp or bundle. The free ends of each fibrilla or "hair" appeared to curve away and spray out from the centre of the top of the bundle. There was no difficulty in following the dozen or more filaments into the main bundle, which could be traced into the cell for one third of its depth (Figs. 1 and 2).

The specimen also showed what the exhibitor regarded as a nerve-fibril immediately below the body of one of the outer hair-cells; the termination of this fibril could not be recognised.

In the discussion which followed the demonstration, Mr. SCOTT remarked that the membrana tectoria revealed definite structural characters, and was constant in its relation to the hair-cells in all his sections of the human cochlea. He felt justified in saying that so far these observations lent colour to the views expressed by Shambaugh,<sup>1</sup> who, he understood, regarded the membrana tectoria as the essential vibrator, which, by responding to sound-waves, mechanically stimulated the hair-cells.

## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

(Abridged.)

*Fourteenth Annual Meeting, held at Pittsburg, Pa., May 28, 29, and 30, 1908.*

DR. EWING W. DAY, *President, in the Chair.*

(Continued from page 159.)

### TREATMENT OF INFECTIVE LABYRINTHITIS AFTER FIFTEEN YEARS' EXPERIENCE.

BY PROFESSOR ALBERT JANSEN (OF BERLIN).

ONE hundred labyrinthine operations were described. In only 2 cases was the cochlea alone operated upon; in 23 cases both cochlea and vestibule were opened, and in the remainder of the cases the vestibular apparatus was the seat of operation. Only 5 cases followed acute middle-ear suppuration. Twenty-nine cases

<sup>1</sup> *Arch. of Otol.*, No 1, 1909.

resulted in death. In 16 cases purulent meningitis existed previous to operation. In 3 cases death ensued from brain complications. After classifying his cases and discussing each class, the author proceeded :

“ In opening the vestibule I have for fifteen years employed two methods. One method attains the exposure of the vestibule, inside the temporal bone, by leading along the horizontal semi-circular canal ; the other one by removing the posterior wall of the petrous bone from the posterior cranial fossa at the upper crus from the lower, and at the posterior crus from the upper canal, as well as at the posterior crus from the horizontal semi-circular canal. Injury to two organs must be avoided—to the facial nerve in front, which may happen in the first method ; to the dura behind, which may occur in the second method.

With a high position of the jugular bulb and the fossa jugularis, a lesion of the bulbus is also possible, and if the fossa jugularis stretches very high up into the temporal bone the bulb may, especially when the operation is made from behind, be very much in the way of the operation, even making it impossible. A lesion of the inner wall of the vestibule, with injury to the dura of the internal auditory canal, is almost impossible if the operation is properly performed. But caution is necessary, the wall in part being very thin. The injury to the dura in the meatus has resulted in death. The opening of the internal auditory meatus is most easily possible, if one loses the direction and penetrates above or behind the vestibule into the petrous bone, instead of forwards and downwards into the vestibule.

*The Opening along the Horizontal Semi-circular Canal, Semi-circular Canal or Tympanal Method.*—I usually begin the operation by removing the upper half of the horizontal semi-circular canal, and thus fix upon the anterior crus of the horizontal canal the limit below which one may not go. By operating carefully it is always possible to preserve the lower wall of the anterior crus ; then the facial nerve is protected from lesion. At the posterior crus I remove the whole canal and so keep away from the roof of the vestibule. I also remove the bone under this part of the horizontal canal in the direction sloping down to the back, taking the very greatest precautions with regard to the facial, which lies in front.

The stapes plate reaches with its posterior margin about the lateral boundary of the vestibule, and takes up a middle position between horizontal and vertical. By this and by the extension of

the ampullar extremities of the horizontal and upper canal, the upper portion of the vestibule leads towards the front.

If I penetrate in this way by the anterior crus in the direction of the canal, and above its lower wall towards the vestibule, and by the posterior crus close to its posterior and lower edge, I have selected a large portion of the lateral wall of the vestibule as the place of attack.

Thus it is easy to open the vestibule either in its posterior lower part or near the ampulla of the horizontal semi-circular canal. According to the pathological changes, the vestibule is to be opened here or in front, above, or at the posterior orifice of the semi-circular canal; in cases without fistulæ, in the described way: along the horizontal semi-circular canal, in the direction of the oval window, parallel with, behind, and a little below the facial bridge. Thus the facial is protected from injury.

The direction in which we have to seek the anterior wall of the vestibule is indicated not only by the anterior crus of the horizontal semi-circular canal, which might lead us astray by its long extended position, but also by the fenestra ovalis, which we can in any case precisely locate by the introduction of a hooked probe. In cases of narrowing of the vestibule by new formation of bone we must expose the front part, at the same time preserving the portion of bone which supports the lower wall of the anterior crus as a bridge. We penetrate behind and parallel with this bony ridge, inwards, downwards, forwards, in the direction of the fenestra ovalis. If the vestibule is found, the examination with a hooked probe will guide us as to the size, form, and position of the cavity. The lateral wall may easily be felt with the probe, and then neatly removed with a narrow chisel or burr.

If one wishes to obtain information of the contents of the vestibular apparatus the chisel is to be preferred. To prevent the anterior crus from snapping off the burr is the better instrument.

By using necessary caution and by experience the facial need not be exposed.

It is of the greatest importance to use the chisel as a plane, and to plane off shaving after shaving.

It is of importance to reach the deepest point of the vestibule, to lay bare its floor, to smooth the way to it properly, and to arrange that it may be seen at a glance. By exposing the lower orifice of the inferior semi-circular canal we enlarge the cavity of the vestibule downwards, and by exposing the common orifice of the vertical semi-circular canals we enlarge it at the back. The burr

is selected for the enlargement of the vestibule towards the back, either the better to reach diseased bone lying behind the labyrinth, or to create below more favourable conditions for wounds, either with or without exposure of the dura.

Finally, I expose the ampulla from the upper vertical semi-circular canal, and then consider the operation completed. Only very rarely do I follow up all the canals, starting always from the cavity of the wound. The disease in the canals is usually slight, and after exposure of the orifices into the vestibule the conditions for healing are especially favourable in them.

It is not necessary to expose it further from the fenestra ovalis. Only if the edge of the fenestra ovalis itself is diseased, or the wall of the labyrinth affected, and an operation on the cochlea becomes necessary, do we consider it expedient to scrape and enlarge the fenestra ovalis with the burr.

In general I warn against this, especially against vigorously enlarging the fenestra ovalis towards the back and below, for the bridge which supports the facial is thus narrowed and necrosis is facilitated.

This semi-circular canal method is the obvious method, in the ordinary forms of labyrinth disease, pointing to the safest way. Any danger to life is out of question.

I should most emphatically reject all attempt to arrive at an opening of the vestibule from the fenestra ovalis only. The widening of the passage is too inconsiderable, and cannot, in my opinion, be of sufficient use, even if, by widening downwards to the back, the opening can be enlarged to the floor of the vestibule.

The cases which are cured by this method of operation would, in all probability, have healed quite spontaneously.

*Endocranial method.*—I have much more rarely employed the second method of exposing the vestibular apparatus after removing the posterior wall of the petrous bone and widely opening the posterior, and when necessary, the middle cranial fossa.

I performed this operation for the first time in the year 1895, and I then indicated the circumstances under which I considered it right to employ this method. (See Blan's "Encyclopedia.")

Upon the radical operation follows next the removal of the posterior wall of the pyramid as far as the labyrinth wall. Starting from the back the labyrinth is now removed as far as the middle of the horizontal semi-circular canal.

One begins by chiselling away the lower vertical semi-circular

canal, the posterior crus of the upper one, and adds to the removal of the posterior half of the horizontal one. The exposure of the posterior part of the vestibule is easy and without danger. Working at the dura of the cerebellum at this great depth is not quite so free from danger, and on account of the fixation of the dura here to the aqueductus vestibuli, the dura occasionally tears, fluid runs off, and even if the cases mostly take a favourable turn, one cannot be certain of a good result.

In order to expose the posterior portion of the vestibule thoroughly, one must remove some bone behind the anterior crus of the horizontal semi-circular canal and parallel to it.

The anatomical conditions of the temporal bone are sometimes very complicated, and abnormal position and deformity of single parts may render the carrying out of this method impossible, as when the fossa jugularis has developed extremely high up, immediately behind the vertical semi-circular canal high inside the pyramid.

In rare cases the disease of the bone goes deeper still, so as to compel one to penetrate at the posterior pyramid wall as far as the *porus acusticus internus*. It seems to me inadmissible to lay down this as a rule, although it has been proposed. We have to remove that which is necessary, not that which is possible. This endocranial method is adopted in all complications in the posterior cranial fossa, and in all diseases of the bone which reach as far as the posterior pyramid plane (floor). Here, also, the horizontal semi-circular canal, so easily recognisable, serves as a guide.

It is desirable also to expose the anterior portion of the vestibule in such a way that from the auditory canal a sufficient view may be obtained. The small portions of bone which impede the view from the side and front can be removed without danger to the facial.

Besides the entire removal of all diseased matter from the vestibule, this method has the advantage of being absolutely safe for the facial.

If the exposure of the front portion of the vestibule is not carried out exactly from the back as here described, the enlargement of the entrance of the fenestra ovalis downwards and backwards is indicated.

This method is recommended by Nennmann as the standard operation in the opening of the labyrinth, and is constantly performed. I cannot agree to this plan, for the operation is certainly rendered more difficult by the extensive exposure of the cerebellar

dura, and involves the danger of perforation of the dura and imminent meningitis.

The sinking of the temporal dura at once causes a quite considerable contraction of the cavity of the operation, but this contraction does not always mean an acceleration of the healing process. It may very frequently have an extremely detrimental effect.

I endeavour to avoid exposure of the dura, if possible, and consider the preservation of the bony edge of the mastoid an advantage well purchased under certain circumstances, even by a somewhat slower healing process. Still, I by no means wish to express the opinion that in this way healing is in general delayed. Nor, consequently, for accelerated healing do you perform every radical operation, also removing the posterior and upper petrous wall.

The semi-circular canal method is, in my judgment, very much simpler and easier. The construction of the temporal bone may be such that this method is by far the easiest.

In a serious destruction of the horizontal semi-circular canal, where, for the complete opening of the vestibule, it is perhaps only necessary to remove one or two millimetres of bony substance, no one will propose the far more dangerous, troublesome, and difficult opening from behind, and if the facial should have to be entirely destroyed there is certainly no reason for considering this method the standard one.

*Operation upon the Cochlea.*—Although I formerly proposed the complete removal of the cochlea, in recent times I have restricted myself to the removal of the promontory and the exposure of the lower cochlear whorl and the preservation of the modiolus. Having seen one case end fatally in which, after complete removal of the cochlea, the dura in the interior auditory canal was perforated, I have grown cautious.

In order to obviate this, it is necessary to limit oneself to the removal of the promontory, to the exposure of the lower cochlear whorl round about the modiolus, without injuring the modiolus itself. Should one inadvertently, or owing to destruction in the cochlea, arrive at the bottom of the inner auditory meatus, probing in this dangerous region and opening of the dura must be avoided. If the subarachnoid space is opened a free flow of the cerebrospinal fluid occurs.

In order to guard against any possibility of lesion to the subarachnoid space the modiolus at its base should not be interfered with.

When the cochlea in the interior has become transformed into a bed of sequestra, pus, and granulations, the removal can be effected without danger by means of the gouge. I generally perform the operation either with a chisel or a burr, the smallest chisel for preference, beginning with the enlargement of the fenestra ovalis towards the front below. If the burr is used, the mode of operation is very simple; it is introduced into the fenestra ovalis, the bone is chipped off towards the front below at the promontory, corresponding to the lower cochlear whorl.

Dr. CANFIELD, of the University of Michigan, said that the symptoms generally considered diagnostic of labyrinth involvement—*i. e.* nausea, vertigo, disturbances in equilibrium, and nystagmus—were noticed usually only when the labyrinth has been suddenly invaded, or during extension of disease within a labyrinth already involved. Some authors maintained that von Stein's sign was present at all times and in all cases of labyrinth suppuration. In one case, at least, with a fistula in the external canal, he had been unable to note any evidence of its presence. Again, as von Stein's sign was an indication of disturbed labyrinth function, but not necessarily an evidence of infection, so it might be present during the course of a chronic suppurative otitis media without erosion of the labyrinthine capsule. He thought all had noted marked disturbances of equilibrium in patients with chronic suppurative otitis media in whom no fistula into the labyrinth could be discovered, and in whom all symptoms disappeared after the radical operation.

He emphasised the fact that marked deafness was not present in all cases of involvement of the labyrinth. When a patient suffering from a chronic suppurative otitis media developed under observation a sudden increase in deafness in the suspected ear the symptom was of great significance. The absence of marked deafness did not necessarily mean, however, that extensive pathological change had not already taken place in the labyrinth, for not only might the vestibule be filled with pus, but the cochlea might also be invaded without destroying hearing for the conversational voice. The fact that a very high degree of deafness often exists without extension of the infection to the labyrinth, and that extension of the disease to the labyrinth sometimes takes place without causing marked deafness, lowers the value of the voice test considerably. The Rinne was negative more often than it was positive. The high limit was always lowered.

He said the diagnosis of labyrinth suppuration was at present

made with certainty, in the majority of cases at least, only at the time of the radical operation by the discovery of disease of the inner mastoid or tympanic wall.

Much difference of opinion existed concerning the pathological significance of perforations in various portions of the internal labyrinth wall. In his own cases, judging from hearing test and result of operation, single perforations in the horizontal semi-circular canal occurred only in cases of circumscribed labyrinth disease. It would seem that double or multiple perforations must always speak for an extensive pathological condition. In considering the value of these perforations he felt that it should be considered that disease had been demonstrated at autopsy in cases in which perforation could not be recognised.

The indications for operation upon the labyrinth were met in two classes of cases:

(1) When symptoms referable to labyrinth disease had not been present before operation.

(a) When a single perforation was discovered through a semi-circular canal, from which pus escaped.

(b) When a perforation through the oval window was discovered, whether pus was seen or not. In these cases, marked deafness and extensive disease of the vestibule must be suspected.

(c) When labyrinth symptoms developed suddenly after a radical mastoid operation. The majority of these cases were due to a latent labyrinth suppuration, an acute exacerbation of which had been set up by the operation. In such cases the vestibule was to be opened widely and further operative measures governed by its condition. In isolated perforations through the horizontal semi-circular canal in which no other evidence of disease could be demonstrated, operation upon the labyrinth might be postponed. This was in support of Hinsberg's statement that in all cases of circumscribed semi-circular canal diseases, not a single patient succumbed to the consequences of the labyrinth suppuration.

In this connection he pointed out the necessity of watching very carefully cases in which a single perforation of a semi-circular canal had been demonstrated, so that on the appearance of vertigo, nystagmus, and diminution of hearing, the labyrinth might be promptly opened.

(2) Those in which labyrinth symptoms had been present before operation.

(a) When no fistula was found.

(b) When fistula was found.



*a)* When no fistula was found. This class of case was very small, and included those cases which developed labyrinth symptoms while under observation, and those in which deafness typical of disease of the perceptive apparatus could be demonstrated. Symptoms suggestive of labyrinth suppuration so frequently disappeared after the radical mastoid operation that, unless the pathological change in the tympanum and mastoid was altogether too slight to account for the labyrinth symptoms, delay might be allowed. To this class belonged also those cases in which a deep-seated cerebellar abscess or extra-dural abscess was suspected (Jansen).

*(b)* When a perforation into the labyrinth was found in a case that had previously shown labyrinth symptoms, the indication for opening the labyrinth was clear.

In all cases in which labyrinth suppuration had been suspected before operation, or had been diagnosed at the time of operation by the discovery of a fistula leading into the labyrinth, the radical mastoid operation should, of course, be performed. The last steps in this operation included, he thought, as careful and thorough delineation as possible of the anatomical structures in the inner wall of the mastoid and middle ear. Only by the most painstaking investigation of this wall could an intelligent decision be reached as to the condition of the interior of the labyrinth. The method of operative attack upon the labyrinth might vary with the location of the fistula. If the fistula was found in some part of the semi-circular canal system, that portion of the labyrinth was entered by uncovering the canals widely.

The chief reasons for entering the labyrinth through the canals were that it was more easily accomplished; it was attended by less danger to life than was an attack through the oval window; it was sometimes followed by less damage to the hearing; and finally, it sometimes revealed a localisation of the pathological process that made further operative interference unnecessary. During this step he made it a practice to uncover the facial nerve for some distance in its horizontal portion, in order to learn its course perfectly and thus to avoid injuring it. The operation upon the vestibule, through the oval window, might follow the opening of the vestibule through the canals if the extent of the pathological process warranted, or it might be undertaken first if a sinus through the oval window was noted. It was attended by greater danger to the nerve and to life by the immediate proximity of the inner wall of the vestibule, fracture of which was to be considered of the greatest danger.

The operation upon the cochlea should be made only if definite evidence of involvement of this portion could be seen. This step was the most dangerous part of the operation, not only on account of the most intimate relationship between the carotid artery, the jugular bulb, and the facial nerve, but also on account of the position of the hollow modiolus, which occupies the centre of the cochlea. On account of the fact that the internal auditory meatus terminates between  $\frac{1}{8}$  in. and  $\frac{3}{16}$  in. internal to the promontory, to do more than uncap the pyramid must be exceedingly dangerous. Personally, he preferred to secure a good view of the upper whorl and a fair view of the second by removing the promontory and uncapping the pyramid and stopping there, even though a portion of the lower whorl has not been seen. Of course, if the entire cochlea was loose, it might be removed. Even if caries could be demonstrated in the lower whorl, it seemed to him safer to allow this portion to sequester rather than to remove it with the probability of opening the internal auditory meatus.

Dr. ROBERT C. MYLES had had three unique cases of labyrinthine disease. One was caused by an injury to the semi-circular canal during operation, and the phenomenon of nystagmus and general disturbance of equilibration existed. The patient ultimately recovered. Another patient had an epithelioma in the zygomatic region, to which an escharotic was applied. In some unknown way the destructive agent went into the external auditory canal, where everything was completely destroyed by the cartilage. The question arose whether complete operation should be attempted or whether Nature should be allowed to take care of the process. He made a slit in the external auditory canal, removed the external osseous wall and the annulus tympanicus, and when the labyrinth was reached it was found to be practically dead. He removed the greater part of the semi-circular canal and cochlea, and the patient made a complete recovery, with perfect hearing. These cases showed that labyrinthitis, if looked after, was not such a desperate condition as it was sometimes considered.

Professor JANSEN, in closing the discussion, said: In answer to Dr. Richards' question, I would like to say that I consider the caloric reaction of Bárány to be very valuable. Through it the latent disease is made manifest, which is undoubtedly a decided advantage. But as an indication for operation on the labyrinth the caloric reaction has not the same significance.

If Dr. Richards thinks that Neumann's operation is different from that described by myself (regularly to open the vestibule and

cochlea, and to incise the dura), I would like to answer that about fifteen years ago I made the suggestion to open the vestibule and cochlea widely where they are diseased and there is indication for operation. I have often described both the operation and the methods. In the course of years I have learned to restrict my operation to a portion of the labyrinth, and to individualise in my operations, whereas Neumann always opens the entire labyrinth. Even though he has made a few unimportant modifications upon my operation, the operation can hardly be called his own. The next few years will decide whether my present standpoint is the proper one, namely to individualise, or Dr. Neumann's standpoint, to generalise and open the entire labyrinth. I do not make an incision in the dura in every case.

In reply to Dr. Harris, I would like to say that I have often observed cases with labyrinthine symptoms before the radical operation heal without an operation on the labyrinth. In the majority of cases changes in the middle ear probably cause a reaction in the vestibular region. I do not operate on every case with labyrinthine symptoms. I have laid particular stress upon the infectious and progressive character of the labyrinthine affection. On account of a too conservative attitude, and too late an operative interference, I lost one case. It is very difficult to draw the line between the cases which ought not and the cases which ought to be operated upon.

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## AUSTRIAN OTOLOGICAL SOCIETY.

June 22, 1908.

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PROFESSOR ADAM POLITZER *in the Chair.*

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### EXHIBITION AND DISCUSSION OF CASES ILLUSTRATING "VESTIBULAR NYSTAGMUS."

V. URBANTSCHITSCH showed a case of *tubercular disease of the middle ear*; tubercular pulmonary lesions were also present. Before operation the range of hearing for conversation was two metres, and for whispers half a metre. There were symptoms of a fistula. A marked rotatory and horizontal nystagmus, directed towards the diseased side, occurred even by pressure on the tragus.

and was intensified by raising the air-pressure in the meatus, whilst lowering the air-pressure produced a nystagmus directed towards the healthy side, but of a weaker character. Stooping and quick movements of the head also induced nystagmus and giddiness. The caloric reaction was maintained. A fistula of the semi-circular canal was diagnosed, but, as the hearing was as noted above, the labyrinth operation was not undertaken. On account of the co-existing lung disease a radical operation was carried out under local anæsthesia as recommended by Neumann, and revealed a large fistula in the semi-circular canal with a sequestrum fixed above it between the dura and the petrous bone. As this sequestrum was being seized and removed with some difficulty, the patient experienced a feeling of giddiness and felt a "twitching" of the eyes (? nystagmus), but immediately after the removal the giddiness disappeared, and he felt much relieved. Pressure now over the fistula did not produce nystagmus. For a short while after the operation a rotatory nystagmus directed towards the sound side was observed, which gradually disappeared.

The patient is now totally deaf and the caloric response very much diminished. The spontaneous giddiness has disappeared.

Urbantschitsch leaves the question open as to whether the symptoms were due to the pressure of the sequestrum on a second fistula in the superior canal, or whether the giddiness at the moment when it was extracted was referable to irritation of the dura.

Urbantschitsch also made some remarks on the results of a *post-mortem* examination in the case of a woman who had died from the effects of a purulent meningitis of otitic origin. The patient had come to his clinic with no symptoms worthy of comment. She had a chronic purulent discharge from the middle ear. At the operation the posterior and middle fossæ of the skull were found covered with a purulent discharge, as was also the sinus. As the temperature was considerably raised an opening was made in the dura and some purulent serum evacuated. An incision was also made into the brain but no pus found. The radical operation was performed. The first day after the operation the patient's condition was good and there was no headache. On the second day slight frontal pain occurred, which was rapidly followed by coma and then death. The temperature rose considerably after death. At the *post-mortem* purulent meningitis was revealed and a purulent thrombus found in the superior petrosal sinus. The discrepancy between the very slight clinical symptoms and the fulminating character of the meningitis was remarkable.

BÁRÁNY brought forward a patient who had been submitted to operation on account of a *chronic purulent ear discharge* and the presence of a *fistula in the labyrinth*. The interest in the case lay in the fact that before the fistula had developed the patient had been carefully examined in the clinic. The examination was carried out by Dr. Kipróff, who at the time was making accurate notes respecting caloric nystagmus. Dr. Kipróff had noted that at the first examination the nystagmus, after syringing with water at 30° C., had commenced in fifteen seconds, and lasted for two and a quarter seconds. On the healthy side the nystagmus had begun in ten seconds, and lasted three minutes. After ten revolutions the nystagmus towards the diseased side lasted fifty-five seconds, and towards the healthy side forty seconds. No symptoms of fistula. Eight days after this examination the patient came complaining of giddiness, which had commenced suddenly three days before. Considerable giddiness occurred either on walking, quick movements of the head, or on stooping, and when the head was held backwards an undoubted nystagmus appeared directed towards the diseased side. In testing for the presence of a fistula, raising the air-pressure produced a marked nystagmus towards the diseased side, whilst lowering the air-pressure evoked a weaker nystagmus towards the healthy side. There was no spontaneous nystagmus. Syringing the healthy ear with water at 30° C. caused a nystagmus in fifteen seconds which lasted three minutes, whilst on the diseased side it commenced in fifteen seconds and lasted two and three quarter minutes. After revolution the nystagmus lasted forty seconds towards the diseased side and forty-five seconds towards the healthy side.

An examination made three days later showed: The caloric nystagmus on the diseased side began in ten seconds and lasted three minutes, on the healthy side it began in fifteen seconds and lasted two and a half minutes. Revolution showed a nystagmus towards the diseased side of one minute, and towards the healthy side of forty-five seconds. Fistula symptoms as before. A radical operation revealed an undoubted fistula in the canal. After the operation a nystagmus towards the healthy side appeared, hearing was lost and the irritability of the vestibule markedly lessened.

The case is accordingly of great interest, since it is the first instance of an accurate examination and testing of the cochlear and vestibular apparatus having been carried out before the spontaneous development of a fistula.

Bárány submitted that this case showed that with the occur-

rence of a fistula there may develop an abnormal irritability of the vestibular apparatus, which is evidenced by giddiness (both spontaneous or as the result of movements of the head), but that a hyper-excitability, as is asserted by Alexander to be always present in these cases, does not take place. That a physiological hyper-excitability exists, due to the vestibular apparatus responding more actively to physiological stimuli, was regarded by him (Bárány) as extremely doubtful.

In connection with this case Bárány referred to the results obtained by Urbantschitsch recently in the Ear Clinic at the University. One hundred and sixty patients were examined before operation as to the presence of symptoms of fistula. Of these 145 showed no symptoms, and in none of them was a fistula found at the operation. Bárány knew of no case himself in which, after an unbiassed examination, no evidence of a fistula was found, and in which at the operation one was subsequently discovered. All these cases also showed a typical caloric excitability. In four cases in which no fistula symptoms were present the caloric excitability was negative. In eleven cases symptoms of fistula were found before the operation, nine of which up till now have been submitted to operation, and a fistula in the canal found in all. Six of these showed very marked symptoms of fistula, such as obvious nystagmus resulting from variations of air-pressure. The caloric excitability was normal in these cases. The hearing was certainly preserved in some cases, but in others there was complete deafness. In three of the cases fistula symptoms were only slight, viz. in place of a nystagmus only a quite small rotation of the eyeball, always occurring in one direction when the air-pressure was raised, and in the other when it was lowered. In all of these cases the caloric excitability was either strongly diminished or increased, and complete deafness was present. Accordingly these symptoms may be regarded as perfectly trustworthy. It had happened that up till now Bárány had only seen cases of fistulae in the canals, and in most of these he had noted nystagmus directed towards the diseased side when the air-pressure was raised, but he had found some exceptions to this rule.

In the year 1906 Gradenigo reported to the Italian Laryngological, Rhinological and Otological Society the results of some investigations which Dr. Mimidian had carried out in his clinic. Dr. Mimidian had tested a number of cases in respect of the effect of variations of air-pressure in the external auditory meatus. He noted that a nystagmus occurred equally both when the

pressure was raised and also when it was reduced, and that it was especially noticeable whilst the air-pressure was being altered. Gradenigo drew no further conclusions from these observations. His account, however, had been the cause which had prompted Bárány to systematically test for fistula symptoms. From these examinations Bárány was able to state that when raising the air-pressure produced nystagmus, a nystagmus directed towards the opposite side was called forth by lowering the air-pressure. The results which Dr. Minidian had found, he considered, were due to thermal effects which were dependent on an incomplete closure of the meatus and the current of air passing in and out thereby, when an attempt was made to raise or lower the air-pressure.

In January, 1908, an article by Alexander and Lassalle on "The Clinical Aspect of Labyrinthine Nystagmus" appeared in the *Wien. klin. Wochenschr.* (Year 22, Nos. 1 and 2). In the April number of the *Monats. f. Ohrenheilk.*, an article by Mackenzie was published, in which occurred a list of the cases already published by Alexander, two further cases being added. In all of these Alexander had observed symptoms of a fistula, but subsequently no fistula was discovered. These cases Bárány considered were all, most probably, instances of a fistula in the stapes or of a perforation in the round window, to which conclusion he had arrived either (*a*) from the details of the history which was given, (*b*) from the description of the symptoms of the fistula, or (*c*) from the account of the course of the case after operation.

CASE I.—Before the operation repeated attacks of giddiness. In testing for the presence of a fistula an undoubted rotatory nystagmus directed towards the diseased side occurred when the air-pressure was raised, and towards the sound side when it was lowered. Immediately after the operation an acute labyrinthitis appeared.

CASE 10.—A thirteen-year-old boy; chronic purulent discharge on both sides. By forced raising of the air-pressure in the right meatus a rotatory nystagmus was produced towards the right, and by a slight raising of the air-pressure in the left meatus a marked rotatory nystagmus occurred towards the left. No report was given as to the effect of lowering the air-pressure. The asymmetry of the nystagmus on the two sides is best explained by the assumption of a fistula in the stapes on the left side.

CASE 11.—Both before and after the operation marked attacks of giddiness. Facial paralysis. Raising the air-pressure in the diseased ear evoked a rotatory nystagmus towards the diseased side.

In all these cases one must assume a fistula of the stapes, since Alexander found no fistula in the semi-circular canals. At all events the other supposition cannot be entertained.

In addition to these there are three other cases in which Alexander observed a rotatory nystagmus directed towards the sound side when the air-pressure was raised. In one case which was submitted to operation there was no giddiness either before or after the operation.

A perforation in the tympanic membrane closed under treatment in two cases, and in these no nystagmus appeared on raising the air-pressure after this closure had taken place. Bárány considered that these symptoms were in reality dependent on thermal effects produced by the repeated passage of a current of air in the meatus, just as indeed catheterisation of the Eustachian tubes may also in isolated instances give rise to a caloric nystagmus.

In conclusion, Bárány referred to a case in which Leidler had confused the symptoms of fistula with the nystagmus described by Stransky. The patient had been brought forward at the last meeting, and was a case in which Leidler had made an incision into the dura. At the meeting Leidler had made no reference to any "compression" nystagmus, or he (Bárány) would have directed attention to this point.

Leidler had said in the account of the case that a nystagmus occurred on both sides when the air-pressure was raised in either ear. He (Bárány) happened to have had the opportunity of examining the patient two or three days before, and had observed that the associated nystagmus of Stransky was easily evoked. He demonstrated to the audience how easy it was in this case to confuse such nystagmus with symptoms of a fistula. In this case a fairly well-marked oscillatory nystagmus with synchronous movements of the lids occurred, not only by raising or lowering the air-pressure, but also by mere pressure on the mastoid process or on the tragus, or by pinching the eyeballs without any other stimulus. That such a skilled observer as Leidler should have been able to fall into such an error appeared to him (Bárány) ample evidence of the difficulties met with in these cases.

In Alexander's cases it was nearly always a question of "compression nystagmus." Bárány, however, contended that one could diagnose a fistula only if compression evoked a nystagmus in one direction and aspiration in the other. In this connection he would like to direct attention to a small detail. Aspiration should be made immediately after the column of air in the meatus had been



compressed, without first removing the end-piece of the instrument from the meatus, for this reason: during compression the movable parts in connection with the fistula will be driven in towards the labyrinth, and thus cause a movement of the endolymph. If now aspiration is induced these parts will not only return to their original position, but will be even drawn further outwards. In this way a greater effect will be produced than would occur if after compression the end-piece were removed and the movable structures in the neighbourhood of the fistula allowed to gradually return to their original position before aspiration is commenced; and also a much stronger force will be required to obtain the same result.

He also alluded to one other point mentioned by Alexander in his article. Alexander had not been able to observe any symptoms of fistula in 20 normal cases, but said that he previously had sometimes produced attacks of giddiness whilst carrying out Gellé's test. He had said "giddiness during the application of Gellé's test on normal patients seems to occur especially when the external meatus is not rendered perfectly air-tight. The noise made by the escaping air and the movements of the patient's head may explain the occurrence of giddiness in these cases." From this statement Alexander shows that he had made an inaccurate application of Gellé's test, for if the outer ear is not made air-tight it becomes a simple blowing in and out of air, and the patient will naturally hear nothing. Moreover, it is obvious by the continued repetition of such an experiment a caloric nystagmus will be induced.

Bárány then referred to a communication made by Jansen at the Fourteenth Congress of the American Laryngological, Rhinological, and Otological Society at Pittsburg in May, 1908, which was the result of fifteen years' experience of the treatment of purulent labyrinthitis. Jansen had an extraordinarily large number of cases through his hands, which, however, were not approached in an altogether unbiassed frame of mind. Latterly Jansen had adopted the caloric tests for the vestibular apparatus, but he does not appear to have known anything of the symptoms of fistula. At least Bárány had been unable to find any mention of it in his work. "Stapes luxation" played a great part in these cases. If these cases were compared with the cases of so-called "serous labyrinthitis," as described by Alexander and Voss, certain points of resemblance were found. In these cases nystagmus and giddiness did not occur directly after the injury, but twelve to twenty-four

hours afterwards, or even later still. Jansen had observed nineteen such cases, of which only two had recovered without the labyrinth operation. Luxation of the stapes happened only six times during the radical operation and twelve times during the after-treatment, and notably during enrettage. Thirteen cases were submitted to the labyrinth operation; in nine cases cure resulted. The principal difference between Jansen's cases and those of Alexander lay in the high mortality of the former, whilst all those of Alexander and Voss recovered. Jansen said quite correctly that one could apparently obtain a response to the caloric tests on the first and second days, and that therefore the reaction to the caloric test was not a certain evidence of a purulent condition of the labyrinth. Bárány supposed that the differential diagnosis between stapes luxation and serous labyrinthitis might be carried out by testing for symptoms of fistula, either by the adoption of a sterilised rubber cup which could be accurately adjusted over the whole wound, or by the direct application of a small tampon to the area of the stapes. If there was no fistula symptom before the operation, and afterwards such appeared combined with a maintained or only somewhat reduced caloric excitability, it was a case of stapes luxation and not one of serous labyrinthitis. If, however, fistula symptoms were then lacking and the caloric excitability were maintained one could diagnose serous labyrinthitis. In practice this deduction was of great importance, since, if we are able to diagnose serous labyrinthitis by reason of the continued caloric excitability, the labyrinth should not be disturbed, but if it were a case of luxation of the stapes then the labyrinth operation should be performed. He added, however, that a serous labyrinthitis which had caused loss of hearing and a lack of excitability of the vestibular apparatus could not be distinguished from a purulent condition with similar functional deficiency; but he considered that even those cases are better if submitted to operation.

NEUMANN considered that a serous labyrinthitis could be distinguished from one of a purulent character by investigating the condition of the hearing. If, although conversation could not be heard, the tuning-fork, either *via* the air- or by bone-conduction, could be heard on the diseased side, he diagnosed serous labyrinthitis. Jansen spoke in his work of a fifteen years' experience in cases of purulent labyrinthitis. He had made, however, a very incomplete test of the condition of the hearing, and had only adopted the caloric tests for nystagmus during the last year. His reports, therefore, rested on incomplete data from a clinical point of view.

ALEXANDER remarked that he always made use of compression and aspiration. The production of a thermal nystagmus under these circumstances he did not think occurred. As regards the giddiness which took place in some normal cases during the application of Gellé's test, he considered that this was not really so much a true giddiness, but rather a feeling of discomfort brought about by the unpleasant sensation in the ear. He thought that the main point of differentiation between serous labyrinthitis and luxation of the stapes lay in the fact that the symptoms did not appear till some two or three days afterwards in the first case, but in the stapes luxation they became evident sooner.

RUTIX had examined a large series of cases of purulent labyrinthitis histologically. Stapes luxation was very rare. Serous labyrinthitis certainly occurred. He considered that Jansen's account contained many inaccuracies.

HAMMERSCHLAG did not agree with Neumann's view that the condition of the hearing formed a means of distinguishing serous from purulent labyrinthitis, and especially took exception to the statement that the power of perception by bone-conduction on the diseased side was of value. Patients in whom the cochlea had even exfoliated could hear the tuning-fork on the diseased side if it were applied to the mastoid process of that side. The large number of cases of deaf-mutism resulting from meningitis, with "islands" of hearing still remaining, supported the view that such remnants of this faculty might also persist in cases of purulent meningitis.

BÁRÁNY, in reply, did not agree that the condition of the sense of hearing was of value in the early stages of labyrinthitis, and reminded Neumann of a case which they had both had under observation and which for the moment must have escaped his (Neumann's) memory. This was a woman who had died two days after the extraction of the malleus and incus from acute labyrinthitis and meningitis. The first day after the operation she could hear conversation at six metres, but twelve hours later complete deafness ensued. By investigation with his "noise" apparatus he had shown that the hearing of the tuning-fork in the diseased ear *via* the mastoid process on that side in cases of one-sided deafness is only an apparent condition, since if his "noise" apparatus were applied to the sound ear the very loudest tones obtainable by application of the tuning-fork to the mastoid process of the diseased side were not then appreciable.

FERDINAND ALT showed a boy, aged seven, who had a *complete*

*facial paralysis* the result of an operation in a children's hospital in December, 1905. Alt had seen him in April, 1907. There was an opening behind the ear in the mastoid process in which necrosed bone could be seen. The radical operation was performed on May 3, 1907, at which a sequestrum representing the whole of the remaining mastoid process was removed. The facial paralysis did not recover after the operation. Conservative treatment was adopted for five months. On October 17 the wound was again explored, and the course of the facial nerve investigated by the method recommended by the exhibitor. At the point where the nerve turns downwards a sequestrum was found which reached outwards on to the prominence of the semi-circular canal and surrounded the outer and lower walls of the Fallopian canal. The removal of this sequestrum, which had exercised a pressure on the nerve, exposed the latter for some 8 mm. in its course. In a very short time after the operation the facial paralysis had disappeared. Complete power was now present in all branches of the nerve.

Alt also showed a girl, aged nine, in whom facial paralysis had occurred on the right side after a radical operation four years ago on the other (?) side. The cause of this was the involvement of the nerve in scar-tissue in the Fallopian canal. The paralysis here also rapidly recovered after operation. (A detailed account appears in the *Monatsschrift*.)

RUTTIN regarded these cases as open to question if the galvanic reaction had not been ascertained before the facial nerve had been laid free.

GUSTAVE BONDY showed a man, aged twenty-six, in whom the sinus had been opened during an operation for mastoiditis, and in whom, five days afterwards, *fever and rigor* had occurred. When the dressings were changed, since the wall of the sinus was discoloured, the jugular vein was ligatured immediately, and the sinus then freely exposed. This was found to contain blood; the sinus was then slit up and swabbed, as recommended by Whiting. A small thrombus was found adherent to the inner wall corresponding to the discoloured area on the outside.

The fever lasted some days and was accompanied by pulmonary symptoms (fetid sputum, moist sounds, shallow breathing). After eight days the fever subsided. The case illustrated that mere puncture of the sinus in such circumstances must be valueless, and that only free exposure and opening of the vessel can reveal the presence of a thrombus.

E. RETTIX.—*The pathological histology of the Eustachian tubes.* Microscopical preparations were shown of purulent conditions of the tubes in a case of tuberculosis. They had been taken from a patient who in the last weeks of phthisis developed a purulent ear discharge.

It usually happened that the middle ear became infected in the later stages of tuberculosis by the passage of infectious matter up the tubes in the act of swallowing, etc., and the patency of the tubes due to the general cachexia was a favourable condition. These preparations showed that also a direct conduction of the pus, both along and in the walls of the tube, is possible. One could see in these specimens a purulent infiltration of the epithelium, subepithelial layer, and also of the muscular and glandular tissue.

BÁRÁNY showed a woman with *sinus thrombosis*. After an attack of influenza she had had pains in the left ear, but no discharge. Fourteen days afterwards she had pyæmic symptoms accompanied with swelling and pain in the right shoulder-joint. Examination of the ear revealed the picture of a subsiding acute otitis. The mastoid process was not tender. Having regard to the pyæmic conditions the antrum was opened. The cortex was abnormally thick, and close to the antrum two or three cells filled with pus were found. The sinus reached very far forwards, and was opened at the first cut of the chisel; it was unaffected by the disease. After the antrum was opened the sinus was followed downwards, and a purulent discharge appeared. The jugular vein was tied. The sinus was exposed almost to the bulb, and within 3 cm. of the "knee," and the whole thrombus removed. Since then there had been no metastasis, and the temperature gradually fell.

ALEX. R. TWEEDIE.

## PROCEEDINGS OF THE PARISIAN SOCIETY OF LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

February 12, 1909.

### SUBHYOID PHARYNGOTOMY FOR EPITHELIOMA OF THE EPIGLOTTIS.

M. CASTEX showed a man, aged fifty-four, whose entire epiglottis was invaded by a tumour which encroached on the base of the tongue. No glandular involvement. Very distressing pains

during deglutition. Subhyoid-pharyngotomy, which affords a free field of access. Removal of the growth by thermo-cautery. Suture by means of thick silver wire inserted on each side, traversing the peri-thyroid soft parts, passing above the hyoid bone and thus forming a loop, the ends of which were twisted outside the incision. After-results very good. No trouble in deglutition, in spite of removal of the epiglottis.

The result has been quite different in a second patient, whose case was analogous; he sank rapidly thirty-six hours after the operation with intense pulmonary oppression. Relying on this observation and on that of a laryngectomy, where the trachea had, however, been united to the skin, M. Castex thinks that some of these rapid deaths are explicable by a sudden and diffuse pulmonary œdema, the cause of which perhaps is a reflex initiated in the vâgus and sympathetic filaments irritated at the level of the pharynx.

#### OPERATIVE FIXATION FOR DEVIATED PINNA.

M. CASTEX showed a young girl in whom the auricle was displaced forward. He dissected up a large flap of integument on the inner surface of the auricle and on the mastoid region, then sutured the two denuded surfaces in their whole extent, passing the threads through the cartilage on one side and the periosteum on the other. Result satisfactory.

#### ULCERATION OF THE SOFT PALATE AND SUPERIOR MAXILLA.

M. GROSSARD showed (1) a man, aged fifty, in whom these lesions induced a severe contraction of the jaws. He suspected epithelioma, but the rapidity of destruction and improvement under iodo-mercurial treatment, notwithstanding the absence of primary manifestations, caused him to hesitate now.

(2) A young girl, aged twenty, affected during the last six years with aphonia having the aspect of a laryngeal neurosis; all the usual methods for restoring the voice having failed, examination conducted, more particularly on the general state, induced one to think that the aphonia must be due to compression of the recurrent nerve by an hypertrophied thyroid lobe in a subject of Basedow's disease.

(3) A patient affected with paralysis of the left vocal cord from crico-arytenoidean arthritis of tubercular origin.

## VICIOUS CICATRISATION OF THE PHARYNX.

M. KERNIG showed a young girl, aged eight, in whom the posterior pillars were united in the middle line and to the posterior pharyngeal wall, only leaving an orifice 7 mm. in diameter; this condition followed a double tonsillotomy performed some years ago.

Trocar-punch for opening the maxillary sinus by the nasal route.

M. PAUL LAURENT exhibited an instrument which he had constructed for the purpose by Collin's firm; with it he obtains a large opening in the inferior meatus.

## POLYPS OF THE MAXILLARY ANTRUM.

M. LERMOYEZ showed an anatomical specimen confirming Killian's theory, which holds the maxillary sinus to be the seat of origin of fibro-myxomatous polypi of the naso-pharynx. This polyp, the size of a pigeon's egg, passed through the right choana and obstructed the naso-pharynx. Some years previously the patient had blown green fetid pus from the right nostril following dental caries. The discharge of pus had ceased, but trans-illumination still showed dulness of the right antrum. Removal with a hook by seizing the pedicle: the tearing away caused a smart pain in the cheek and teeth.

## NASAL TUBERCULOSIS.

M. LERMOYEZ showed a patient affected with vegetating nasal tuberculosis of the fore part of the nasal fossæ, in which he adopted the following procedure: Detachment of the alæ nasi; systematic resection of the entire cartilaginous septum; thorough curettage of the inferior turbinated bodies and floor. Result excellent, without visible cicatrix or deformity.

## FIXATION OF A VOCAL CORD.

MM. LERMOYEZ and POYET showed a woman who was seized about January 15 with violent pain on deglutition and hoarseness. One found some days after a vivid redness of the larynx with aphthous ulcerations in front of the arytenoids, now disappeared. Eight days later, infiltration of the left arytenoid with fixation of the cord on the same side in the cadaveric position; this immobility

persists, though the arytaenoid has now returned to its normal size. One can adopt two hypotheses: either left recurrent paralysis from neuritis, the result of cold, or else acute crico-arytaenoidean arthritis secondary to an infection of the laryngeal mucosa, in favour of which was the violent pain on deglutition and swelling of the left arytaenoid. The rapidity with which vocal compensation was effected is to be noted.

#### RADICAL CURE OF CHRONIC MAXILLARY SINUSITIS BY THE NASAL ROUTE.

M. MAHU exhibited (1) instruments described in *La Presse Médicale*, February 10, 1909, viz.: A fine perforating shears and some curettes with malleable shanks, by the aid of which he manages to remove the inner antral wall by the nasal route, after partial or entire removal of the inferior turbinated body, and to curette the maxillary sinus.

(2) A woman, aged thirty, operated by this method on January 30, and now recovered. This patient, having refused chloroform, was operated under cocaine in two sittings: First sitting, resection of the inferior turbinated body with the plane; second sitting, fifteen days later, trephining and curetting the sinus. The latter intervention only lasted eight or ten minutes; the operative shock was almost *nil*.

(3) A new epiglottis forceps, very light, designed to grasp the epiglottis and to keep it held forward by the weight of the instrument when the faulty position of this lid occludes the view of the cords.

#### COMPLETE MEMBRANOUS OBSTRUCTION OF THE OUTER EXTREMITY OF THE EXTERNAL AUDITORY MEATUS ACCOMPANIED WITH OTORRHOEA, INDUCING EPILEPTIC CRISES.

M. PASQUIER showed a young girl, aged eight, who at ten months old had a suppurative middle-ear otitis, a complication of measles. On her departure from hospital the tube was completely obstructed. Since then suppuration has persisted through an imperceptible fistulous tract. When this becomes obliterated the retention of pus brings about acute pains in the corresponding half of the head, and twice, epileptic crises with contractions and convulsive twitchings of the whole of the left side.



## TREATMENT OF OZENA BY THE CONDENSATION FORM OF HIGH-FREQUENCY CURRENT.

M. GENDREAU showed two patients affected with ozena whom he treated according to the advice of M. Zimmern. The small condenser electrode mounted on a Bisserie's handle and connected to a large Oudin's resonator was introduced for five minutes in each nasal fossa with a 1 to 2 cm. length of spark; three sittings a week. After twelve sittings these patients are much improved, and may even be considered cured. They no longer exhale fœtid odour, nor expel crusts; their nasal respiration is free, and one of them has recovered the sense of smell.

J. VEILLARD.

(H. CLAYTON FOX, *Trans.*)

## Abstracts.

## NOSE.

**Wishart, D. J. Gibb** (Toronto).—*Malignant Disease of the Nose.* "Journ. of Med. and Surg.," May, 1908.

A history of seven cases.

CASE 1.—October, 1894; man, aged fifty-four. When seen, removed a bleeding polypoid mass from left nasal passage. Six months later nostril was more extensively filled by progress of the disease. Microscopical examination proved it to be scirrhus carcinoma. An external operation was then done, removing part of the nasal bone, the nasal process of superior maxillary, outer wall of antrum, floor of the orbit and the body of the ethmoid, together with a large amount of pus. The incisions healed by first intention, but the disease returned, and patient died several months later.

CASE 2.—January, 1900; youth, aged seventeen. Smooth rounded mass, filling back part of left nose. It had pushed septum over to right. Post-nasally mass filled posterior nares. No bleeding. Three months later all symptoms advanced; growth nearer anterior nares; soft and movable; soft palate depressed. Microscope revealed sarcoma. After applying galvano-cautery once, patient passed out of writer's hands. Three years later patient placed himself under care of Price-Brown, with excellent results, as reported. October, 1908, patient in good health; no return of the disease. ABSTRACTOR.

CASE 3.—October, 1902; nurse, aged thirty-five. Irregular mass in middle meatus on left side of nose. Well-marked proptosis of the eye, and absolutely dark antrum. She declined operation. Coley's fluid was then used. She died six months later after extensive involvement of neighbouring tissues.

CASE 4.—July, 1904; woman, aged sixty-two. Complete left stenosis, with pain and bleeding. Tumour filled left nasal chamber, extending

into posterior nares. Microscopical examination proved it to be round-celled sarcoma. Operation by external incisions. Tumour filled the antrum. The anterior inner and posterior walls of the antrum and floor of orbit were all removed. The wounds healed slowly, discharge ceasing in six weeks. Twenty-two months later patient died of sloughing ulcers of feet, etc., and septiciæmia. Never any return of facial growth.

CASE 5.—November, 1906; man, aged fifty-seven. Right nasal cavity free, with septum curved to left posteriorly. Left side very open in front, but filled from floor to roof in rear part with new growth, which bled freely on touching. Soft palate and pressed down. Naso-pharynx filled with irregular mass. Galvano-cautery operations under cocaine were carried on for some time. But as pain continued to be severe, and the patient grew rapidly weaker, they were discontinued. Examination of segment proved case to be malignant. Patient succumbed.

CASE 6.—October, 1907; man, aged forty-eight. Many years ago nose was broken and deformed. Right nasal stenosis commenced twelve months ago, was complete six months later. Frontal and occipital headaches, much offensive discharge, swelling on right side of nose, no ear symptoms, no epistaxis, irregular growth in right nostril, left passage free, no appearance of growth post-rhinoscopically, no enlarged glands. Microscopical examination proved growth to be malignant. Preliminary thyrotomy was done, and anæsthetic given through the opening in crico-thyroid membrane. A modified Rouge operation followed. The anterior wall of antrum, outer wall of nose, ethmoid cells, what remained of turbinals and anterior wall of sphenoid, with much pus, were all removed. Patient made an uneventful recovery, as reported four months later.

CASE 7.—Youth, aged seventeen. Right nasal passage blocked. Disease so extensive that it was considered inoperable, but on account of alarming hæmorrhage the external right carotid was tied. Ten days later, circulation in temporal artery having returned, the ligature was repeated, affording temporary relief.

Price-Brown.

## LARYNX.

Roger, Paul.—*A Variety of Laryngeal Stridor cured by the Removal of Adenoids.* "Ann de Méd. et Chir. Inf.," July 15, 1907. Review by PH. KUNZ, Berlin, in "Arch. f. Kind.," Bd. 49, Heft 1 and 2.

This refers to the case of a baby, aged sixteen months, who had suffered from laryngeal stridor since the age of six months. At twelve months nasal respiration was much impaired. Operation brought all symptoms absolutely to an end within three weeks. The author refers to the similarity of his observations with those of Eustace Smith, who attributed a spasm of the ary-epiglottic folds to adenoid vegetations.

Alex. R. Tweedie.

Mancioli, Prof.—*Two Symptoms of Lesion of the Recurrent Nerve; Abatement of the Pulse, and Anæsthesia of the Vestibule.* "Bollettino delle Malattie dell'Orecchio, etc.," November, 1908.

By stretching the recurrent nerve the author has experimentally produced in dogs a lowering of the pulse, which he could not produce by section or compression of the nerve.

It seems that this effect, which can be produced by the least stretching,

depends upon the indirect stretching of the vagus, and it can be observed before the disturbance in the movement of the larynx.

Anesthesia of the vestibule, or Massei's symptom, has been observed by Mancini in all the clinical cases he has studied and provoked experimentally in ten dogs. In these dogs, in which complete section or compression of one or both the recurrent nerves had been effected, there was a manifest insensibility of the vestibule of the larynx.

The author believes that this depends on a *neuritis* which ascends from the recurrent to the plexiform ganglion, and from this descends to the superior laryngeal nerve.

*V. Grazi.*

**Labarre, E.** (Brussels).—*Laryngostomy for Absolute Obliteration of the Larynx.* "La Presse Oto-laryngologique Belge," September, 1908.

An account of a case of laryngostomy in a child, aged four, for cicatricial obliteration of the laryngeal cavity after intubation and tracheotomy a year previously.

The operation was performed by Dr. Cheval in January, 1908. The introduction of an œsophageal bougie enabled the operator to identify the anterior wall of the œsophagus easily. Instead of strips of gauze for keeping the rubber tube in place a new plan was employed. The drainage-tube was fastened securely to the tracheal cannula, with a second piece of tube so arranged as to act as a spring, fixed in front of it, for the purpose of increasing the pressure. This modification was found to shorten the period of dilatation.

After five months of treatment there seemed a fair prospect of reaching a cure.

*Chichele Nourse.*

**Jackson, C.** (Pittsburg).—*Tracheo-bronchoscopy for the Removal of Foreign Bodies.* "Archiv für Laryngol.," vol. xx, Part III.

Dr. Jackson draws attention to the advantage possessed by his bronchoscope and tubular laryngeal speculum in virtue of their illumination by a lamp placed at the lower end of the tube. He states that, so far as the view obtained is concerned, a superior bronchoscopy is no less satisfactory than an inferior; it is, in fact, quite impossible when looking through the tube to say whether its length is 20 cm. or 70 cm.

He reports two interesting cases (one of them that of a child aged four) in each of which a large-headed pin was removed from the left bronchus by superior bronchoscopy. Including these two cases the author has carried out ten bronchoscopies for foreign bodies. In seven of these the foreign body was removed, in three it was not. Eight were superior and two were inferior bronchoscopies. Among seven cases of foreign body in the trachea, tracheoscopy was performed in four through the natural passages and in three through a tracheal incision.

*Thomas Guthrie.*

**Massei, Prof.** (Naples).—*Giant Tumours of Larynx.* "Archives Internationales de Laryngologie, d'Otologie, et de Rhinologie," September-October, 1908.

The author gives in detail the operative treatment of ten cases in which tumours, although of great size, were removed by the direct method. This was done by the use of the galvanic snare, curette, and forceps, even where a preliminary tracheotomy was practised.

In most of the cases only cocaine and adrenalin were used, although several *scances* were necessary.

*Anthony McCall.*

**Hammes, Franz.**—*On Surgical Emphysema Occurring after Intubation.* "Arch. f. Kinderheilk.," 1908, Bd. 48, p. 207.

Surgical emphysema resulting directly from intubation is undoubtedly a rare accident. It may be caused in two ways: One by injury to the mucous membrane either at the time of introduction of the tube or from pressure; the other, where the mucous membrane is uninjured by rupture of an alveolus in the lung. Only three such cases have been recorded, two by L. Bauer and one by v. Bokay. The author has seen it occur twice out of 200 cases which had been treated by intubation.

The first, a child, aged three, was admitted suffering from diphtheria. Intubation was performed twice; the second time that the tube was coughed up a thick membrane was also expelled and the breathing remained free; the tube had been in place forty-eight hours altogether.

Two days later emphysema appeared in both supra-clavicular regions. This was gradually absorbed and the child recovered. The second was a child, aged eight. Intubation was carried out on admission without difficulty. The following days there was marked emphysema in the supra-clavicular areas; this also was gradually absorbed and the child recovered.

The author argues that the rupture of an alveolus occurs during an inspiratory and not an expiratory movement. The occurrence of emphysema does not appear to increase the gravity of the prognosis.

W. G. Porter.

## ŒSOPHAGUS.

**Klemur, P.**—*On the Operation for Stenosis of the Œsophagus.* "St. Petersburger med. Wochenschr.," 1908, xxxiii, 597.

The author has operated on five cases after the method devised by himself. Of these two died. In one there was a large blood-clot in the stomach, and the child, already very weak, died as a result of this hæmorrhage.

In the second case, where he failed to pass the bougie from the stomach, he was forced to perform an œsophagotomy, and it was then possible to pass the bougie. When the bougie was changed a hæmorrhage rose from the internal jugular vein, and the child died in spite of immediate ligation of the vessel.

The method of immediate closure of the stomach wound after successful introduction of the bougie obviates the discomfort of a slowly closing fistula.

W. G. Porter.

## EAR.

**Mayer, O. (Graz).**—*The Affections of Organs of Hearing in General Paralysis (of the Insane).* "Arch. f. Ohrenheilk.," Bd. 72, Heft. 1 and 2, p. 94.

Although it is well known that optic atrophy and retinal changes without optic atrophy are not infrequently found in general paralysis, but little attention has hitherto been paid to the condition of the organs of hearing in the disease. The author has made a searching pathological examination of the auditory organ in five patients.

Pathological changes were found in the nervous apparatus in all the ears examined, and varied from incipient degeneration to complete atrophy. The degenerative process attacking the auditory nerve-trunk, ganglia, and end-organs may either be primary or secondary to similar changes in the medulla. In addition to such atrophies a "marantic

neuritis" of the nerve probably occurs, and the interstitial inflammatory processes indicative of neuritis are demonstrable. Lastly, the blood-vessels of the internal ear present sclerotic vascular changes capable of inducing secondary atrophy of the organ of Corti.

Clinically, during the prodromal period of the disease an excessive sensitiveness to high-pitched tones has been observed, coupled with a high-pitched tinnitus and sometimes migraine-like attacks, occurring at intervals of three to four weeks.

In the later period the dementia renders nugatory any attempt at accurate examination. In the intermediate period, however, ten cases were successfully investigated, and five of these presented typical "nerve-deafness," in most of a mild degree. It is impossible to say how much of this depreciation in auditory perception should be attributed to psychological weakness and how much to pathological changes in the ear and auditory nerve, and the same doubt applies to the hyperesthesia of the early stage.

In one case the ear symptoms occurred early, before the onset of the characteristic signs of the disorder. It is suggested that the milder deafness present in the early stages is referable to degenerative changes limited to the cochlea. The grave atrophies of the period of dementia do not, of course, manifest themselves in a manner striking enough to enter into the formation of the clinical picture of the case at this stage.

The article is illustrated by photo-micrographs, showing profound atrophy of the organ of Corti and other points of interest in the special pathology.

Dan McKenzie.

### . MISCELLANEOUS.

**Flatau, S.** (Nürnberg).—*The Sterilisation of India-rubber Gloves.* "Münch. med. Wochn.," March 31, 1908.

Boiling is effective but rapidly destroys the gloves. The Schimmelbusch steaming is only efficacious for the outside unless the gloves are kept open, and for this purpose Flatau has devised open wire stretchers on which the gloves can be fitted and sterilised by steam.

Dundas Grant.

**Langstein, L.**—*Eczema and Asthma.* "Zentralblatt für Kinderheilk.," November, 1908.

On account of the supposed relationship between these two ailments, a salt-free diet was tried by Langstein in cases of asthma, but attempts in this direction to treat the latter disease entirely failed.

Alex. R. Tweedie.

### REVIEWS.

*Special Hospitals; their Origin, Development, and Relationship to Medical Education; their Economic Aspects and Relative Freedom from Abuse.* By RICHARD KERSHAW. London: Pulman & Sons, 1909.

No specialist who reads this charming monograph can fail to be grateful to Mr. Richard Kershaw for the elevating and informing material here offered him. Specialism is, as he will find, no modern

exerescence, but a healthy self-developing and self-supporting growth dating back to the most brilliant periods of ancient civilisation, and, be it admitted, of early superstition. Of its antiquity ample proof is given by the quotation from documents and illustrations of museum specimens with which the earlier pages of Mr. Kershaw's work are freely adorned. Without our knowing it we are led on from page to page, and find ourselves carried through the history of the world to the time when the first special hospital was opened in Britain in the first year of the last century, when the "London Fever Hospital" was founded for the care and prevention of contagious fevers. In 1804 Dr. Cunningham Saunders founded a dispensary for the relief of the poor afflicted with eye disease, still extant as the world-famed "Moorfields." Like general hospitals, the special ones have generally owed their existence to private medical enterprise, and whether the objects of the founders have been in every instance disinterested or not, the results as regards relief of suffering and extension of knowledge of the means of relief are beyond question, whatever side-questions may be raised. Mr. Kershaw pleads in support of the claims of special hospitals to credit for the teaching of their particular branches of medicine, that the specialists appointed to the special departments of general hospitals have been men who have gained their working experience in the special hospitals. There may be exceptions, but we know very many examples of this rule. Mr. Kershaw's book contains some very important statistics, and among these the number of the medical visitors and students at the various special hospitals are among the most interesting and the most convincing as to the appreciation of these institutions by the profession at large. Sir James Paget's large-minded recognition and appreciation of normal healthy specialisation as expressed in his address of welcome to the members of the International Medical Congress in 1881 are very appropriately quoted (pp. 49-50), and are worthy of perusal by all. On the question of economy Mr. Kershaw is a doughty champion of the merits of special hospitals, even if not very large, and he marshals a serried array in the shape of figures taken from the reports of various hospitals, general as well as special, making out a surprisingly good case in favour of the latter. These figures are not to be overlooked. In further support of the claims of special hospitals, the writer quotes in evidence of the respect in which they are held the large number of patients sent to them for opinions or treatment by members of the medical profession at large. This interesting work concludes with a chronological list of the special hospitals founded in the United Kingdom during the nineteenth century.

In this work, in which we would expect Mr. Kershaw as secretary of a hospital for diseases of the throat, nose, and ear to show himself as a mere special pleader, we find him a master of attractive literary style, a dispassionate student of medical history, a fair presenter of his views and a thoroughly agreeable *raconteur*. This brilliant opusculum must have entailed enormous labour, and Mr. Kershaw deserves our gratitude and respect for having expended it to such good purpose.

*The Operations of Aural Surgery.* By C. ERNEST WEST and SYDNEY R. SCOTT. London: Lewis, 1909.

The valuable additions to aural surgery made by Messrs. West and Scott cannot have escaped the notice of our readers, and a work by them on operations on the ear will be welcomed with unusual interest. The

book gives a very complete account of the subject, and will be found most reliable. The long well-recognised operations receive very clear description, but most interest will attach to the consideration of those methods and operations with which the authors are chiefly identified. We turn, therefore, more particularly to their descriptions of operations on the labyrinth and the meninges. The incidence of labyrinthine involvement seems to have been in their practice remarkably, almost abnormally, large, and therefore, while allowing for the enthusiasm of the progressing, their experience of operative interference with the internal ear within a few years is quite exceptional. The complicity of the labyrinth in the conveyance of infection to the meninges is emphatically insisted on by them, but no reference is made to the pioneer writings of Zeroni, whose article on "Operative Meningitis" first awakened the otological world to the importance of this association. The logical deduction that the meninges may be drained through the labyrinth is, we believe, an original idea of the authors, to whom great credit is due for its elaboration. Their description of translabyrinthine drainage deserves careful attention, as also that of their application of continuous lumbar drainage to the treatment of otitic meningitis. In the introduction an excellent account is given of the methods of testing the condition of the labyrinth, especially by testing the direction and time of induction of nystagmus produced by rotation and by caloric stimulation of the ear. The authors express their indebtedness to Mr. Tweedie, of Nottingham, for reporting the results of his observations of Dr. Bárány's work at Vienna. They themselves have found, however, that the best results with rotation are obtained when the rate does not exceed one revolution in five seconds, and the number of revolutions in one direction does not exceed three. Our readers will no doubt test these observations for themselves. One of the most valuable chapters is the one on an operation for early malignant disease of the external auditory meatus and middle ear, the instructions in which, as regards both diagnosis and treatment, receive ample confirmation from the reports of actual cases described in the appendix. The work is freely illustrated, but the illustrations are mainly reproductions of photographs of instruments laid out for the various operations. We trust in the next edition to find in addition to these, or instead of them, drawings representing the anatomical parts involved in the operations and at the various stages of these operations. Heine's work on "Operations on the Ear" offers an excellent model in this respect, so far as it goes. Messrs. West and Scott have imparted their individuality to their work, which is destined to occupy a very important place, although it does not make the customary amount of well-merited reference to the writings of foreign authors. It is easy, however, to rectify the defect in another edition, and without sacrificing British originality to ward off the reproach of our being "*penitus toto divisos orbe Britannos*."

*Medical Annual for 1909.* Bristol: J. Wright & Co.

In the "Medical Annual" for the present year there is the usual excellent *résumé* of the progress in all the practical departments of medicine and surgery, and the sections devoted to our special subjects are certainly well up to the usual standard. Although there have been comparatively few striking advances during the past year in connection with laryngoscopy, Killian's methods, as carried out by means of von Brünning's instruments,

receive an excellent description by Dr. Milligan. The illustrations, which are very numerous, make the description extremely clear. Dr. Watson Williams supplies what almost amounts to an atlas of stereoscopic views of the accessory sinuses of the nose in sections of the skull made in various directions, as well as a number of Onodi's drawings, which show the relation of the accessory sinuses to the optic nerves and other parts of the central nervous system. The stereoscopic plates vary somewhat in merit, but on the whole they are extremely good, though their value would have been very greatly increased by their having been made on a larger scale. The stereoscopic photographs of the larynx supplied by Dr. Garel are certainly very wonderful, and show great progress in the direction of stereo-photography from life, though, as Dr. Watson Williams states, there is reason to hope that better results still may follow from improved technique. Attention is called to Guisez's testimony to the value of cesophagoscopy as a means of accurately diagnosing the existence of cardio-spasm and of efficiently treating this serious affection, as given in his paper in the *JOURN. OF LARYNGOL., RHINOL., AND OTOL.* for September, 1908. The gastroscope is described by Chevalier Jackson, of Pittsburg, the eminent pioneer in this direction, and a number of coloured views, similar to those which appeared in his classical work on bronchoscopy, cesophagoscopy, etc., are excellently produced. In otology the most marked advance is in regard to the diagnosis and treatment of suppurative disease of the labyrinth, in which Dr. Milligan, the editor of the section, is one of the earliest and most brilliant workers. He calls particular attention to the methods of operation elaborated by Messrs. West and Sydney Scott, whose experience at St. Bartholomew's Hospital has, in regard to these cases, been very exceptional and instructive. The section on diphtheria has been entrusted to Dr. E. W. Goodall, whose name is a guarantee for its completeness in every aspect. The publishers have, as usual, been most generous in illustration, and no reasonable reader will be disappointed with this year's volume of the "Medical Annual."

*The Diagnosis of Nervous Diseases.* By PURVES STEWART, M.A., M.D., F.R.C.P. (Second edition, revised and enlarged.) London: Arnold, 1908.

Dr. Purves Stewart's work was obviously one which was expected to reach speedily a second edition, and this expectation has been amply fulfilled. The clearness and terseness of diction which characterise the book would be impossible apart from clearness of judgment and vigour of decision in the mind of the writer. The selection of materials for illustration show him to have the instinct of the genuine teacher, every picture conveying its lesson and existing for that purpose, and not merely to add to the number of illustrations. We are pleased to see that a few slight defects in the description of the examination of the ear which had crept into the first edition have been corrected in this one, which we consider quite equal to standing that severe ordeal the "trial by specialist." The aurist who is not sufficiently interested in neurology to read such a work as this must take a very narrow view of his specialty, and is, we hope, the exception in our ranks. We do not, however, wish it to be supposed that we expect every aurist to pose as a "complete" neurologist. Dr. Purves Stewart's book will do much to help him to his true place.



THE  
JOURNAL OF LARYNGOLOGY,  
RHINOLOGY, AND OTOTOLOGY.

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**RECENT DISCUSSIONS ON THE NASAL ACCESSORY SINUSES  
IN RELATION TO THE OPTIC NERVES.**

BY DR. DUNDAS GRANT.

IN the present issue of this JOURNAL will be found several references to the pathological relations existing between the eyes and the accessory sinuses of the nose.

The abstract report of the discussion in the Ophthalmological Section of the British Medical Association<sup>1</sup> gives the views of British rhinologists and ophthalmologists in regard to this interesting question. Again, in the American Laryngological, Rhinological, and Otological Society,<sup>2</sup> Dr. Christian Holmes, the writer of one of the very earliest articles on blindness produced by suppurative inflammation in the sphenoidal sinus, introduced a discussion on the relation of pathological changes in the accessory nasal cavities to diseases of the eye. We quote also the proceedings of a meeting of the Laryngological and Rhinological Section of the New York Academy of Medicine.<sup>3</sup>

In the Laryngological Section of the Royal Society of Medicine, at its recent meeting,<sup>4</sup> the subject came up in connection with two cases in which retrobulbar neuritis, which was apparently not subsiding, appeared to be beneficially affected by the removal of the hypertrophied portions of the middle turbinals for the purpose of affording access to the sphenoidal and posterior

<sup>1</sup> JOURN. OF LARYNGOL., RHINOL., AND OTOL., p. 267 *et seq.*

<sup>2</sup> *Ibid.*, p. 281.

<sup>3</sup> *Ibid.*, p. 293.

<sup>4</sup> *Ibid.*, p. 255.

ethmoidal cells for exploration and treatment. The exhibitor of the patients was not prepared to say that suppuration was present in these cells, but they were probably the seat of inflammatory changes, and the result suggested that the drainage and depletion of the parts affected by the operative interference accounted for the subsequent improvement in the course of the optic nerve affection.

Some very important points were raised by Dr. Hawthorne, who, as a physician, was able to look at the condition in a wider manner than the pure rhinologist might be expected to do. While realising the facility with which disease could extend from the ethmoid cells to the orbit, he pointed out the difficulty which existed in explaining how such disease should affect the retrobulbar portion of the nerve, and exercise a selective action so as to confine its attack to the papillo-macular bundle and thereby produce the clinical facts usually comprised in the term "retrobulbar neuritis."

The explanation is to a great extent answered by Prof. Onodi, who, in an investigation as to the frequency of dehiscences in the osseous partition between the sinuses and the optic canal, reports their existence in a small percentage of cases, namely, 6 in 550,<sup>1</sup> but still sufficient to explain readily the occasional occurrence of rhinogenic retro-bulbar neuritis. Apart from dehiscence the bone is often extremely thin, and this is shown by Onodi to be particularly the case when the partition (inner wall of the optic canal) is formed by the posterior ethmoidal cell.<sup>2</sup> It is probable that when the condition is attributed to disease of the sphenoidal sinus it is really the posterior ethmoidal which is at fault. In this way is explained the fact that Dr. Herbert Tilley had never seen optic neuritis in any of his many cases of sphenoidal suppuration. Onodi's investigations have revealed the fact that the posterior ethmoidal cell of one side may extend over the sphenoid to the optic canal of the opposite side,<sup>3</sup> where, if there is dehiscence or extreme thinness of bone, a retro-bulbar optic neuritis may be readily produced. The question raised by the physician why the papillo-macular bundle, which in the optic canal lies in the centre of the optic nerve, should be specially affected by an inflammatory condition around the nerve, is obviously a difficult and important one. Fuchs<sup>4</sup> describes this behaviour of the nerve-fibres as "paradoxical," but he attributes it to a peculiar vulnerability, and states that "we connect this vulner-

<sup>1</sup> *Arch. für Laryngol.*, Bd. xv, p. 65.

<sup>2</sup> *Ibid.*, Bd. xiv, p. 371.

<sup>3</sup> *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, vol. xxii, p. 382.

<sup>4</sup> "Text-book of Ophthalmology," 3rd edition, translated by Duane, 1908, p. 722.

ability with its especially exquisite and delicate function, with which, perhaps, there is associated a correspondingly delicate anatomical structure." In the earlier stages there may therefore be a scotoma, at first for red or green with nyctalopia. In benign cases a rapid subsidence has been observed with improvement from day to day and recovery in from two to four weeks.

In regard to treatment Prof. Fuchs advises "above all, the consideration of the causal factor (the nose)."<sup>1</sup> This course of action was followed by the most gratifying result in a case described by him, and which he referred to Dr. Hajek, of Vienna, for rhinological treatment. As readers of Hajek's work on the inflammatory disease of the accessory sinuses of the nose or of our review of it on p. 303 of the present number of this JOURNAL will be aware, his radical method of operating on the sphenoidal sinus includes the free opening of the posterior ethmoidal cells, which, in view of his own and Onodi's anatomical observation, is probably the most essential part of the procedure. These observations may perhaps account for the case quoted by Mr. Westmacott, in which optic neuritis on one side disappeared after surgical opening of the suppurating antrum on the other side. It is here conceivable that the diseased antrum was in pathological continuity with the posterior ethmoidal cell, and that this cell, as often observed by Onodi,<sup>2</sup> extended over the sphenoid to the opposite optic canal. On the other hand the sequence of events may have been merely coincidental.

On the whole there will probably be agreement on all hands that in cases of retro-bulbar neuritis the nasal condition should be carefully considered in accordance with Prof. Fuchs, Messrs. Wray, Parsons and others, more especially if it is not accompanied by signs of disseminate sclerosis and is not subsiding spontaneously with the rapidity characteristic of the benign forms.

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### A NOTE UPON ERRONEOUS RESULTS FROM TESTING PERSONS WITH ONLY ONE FUNCTIONAL EAR.

By MACLEOD YEARSLEY, F.R.C.S.,

Senior Surgeon to the Royal Ear Hospital; Medical Inspector of the L.C.C. Deaf Schools.

From time to time cases have been shown or reported of persons hearing well after removal of the stapes or with serious labyrinthine

<sup>1</sup> *Op. cit.*, p. 524.

<sup>2</sup> JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxii, p. 382.

lesions. Such a one has been described as "a case of exceptionally good hearing after removal of the stapes."<sup>1</sup> In this case, that of a female, aged twenty-seven, double ossiculectomy was performed for chronic suppuration, and the right stapes came away accidentally. Later, a right radical mastoid operation was performed. Subsequent tests were reported as follows:

	R.	L.
Watch	4 in.	3 in.
Whisper "44," "4"	8-10 ft.	4-5 ft.
"66," "99"	25 ft.	20-25 ft.
Word, sibilants	25 ft.	
Containing "r"	8-10 ft.	
Ordinary conversation	25 ft.	20-25 ft.
Tuning forks. { C <sup>+</sup> by air	Normal	-6 secs.
C " " " — more than 60 secs.		
Bone-conduction	+ 2 secs.	
Rinne	Markedly negative.	

It was suggested, in explanation, that the fenestra ovalis had become closed by a thin cicatricial membrane.

The following case, recently under my care, may assist in elucidating these "mysterious" cases:

M. C—, aged twelve, was seen on January 13, 1909. An accompanying note from Dr. H. L. E. Wilks, of Salisbury, stated that she had been under that gentleman's care at the Salisbury Infirmary "with an acute mastoid one year ago." He had operated and removed some carious bone, establishing a communication with the middle ear. The acute symptoms had subsided, but there had lately been a purulent discharge. I much regret that I have been unable to obtain any further information as to the patient's original condition from Dr. Wilks. On examination there was a profuse, offensive, watery discharge from the right ear, the meatus of which was stenosed. Shrapnell's membrane alone remained, and the inner tympanic wall was covered by granulations. There was tenderness over the antrum; temperature, 100° F.; pulse, 102. No nystagmus could be elicited by the thermal test on that side, and no history of vertigo could be obtained. The left membrane was opaque and slightly indrawn.

On January 15 the radical mastoid operation was performed, incision passing through the scar left by the former operation. No sign of the latter could be detected in the bone, save a small pit just behind the spine of Henle. Antrum and aditus were large

<sup>1</sup> Hunter Tod, *Trans. Otol. Soc. of Great Britain*, vol. viii, p. 13.

and full of granulations. The head of the malleus was found, but both incus and stapes had disappeared. A fistula over the prominence of the external semi-circular canal was seen, large enough to admit a probe which, given a suitable curve, passed into the tympanum through the open oval window. The condition was treated by chiselling away the outer vestibular wall below the fenestra ovalis, and the cavity was swabbed out with peroxide of hydrogen, followed by 5 per cent. formalin.

The patient made a satisfactory and uneventful recovery, and the house-surgeon, Dr. Devereux, reporting to me that tests showed a very large amount of hearing in the operated ear, I carefully tested her myself on February 15. The results of this testing are very interesting: Weber's test was lateralised to the left. The voice was heard easily at 15 ft. with either ear, the whisper at 2 ft. on the right, and 15 ft. on the left. Rinne was negative to C and C<sub>2</sub> on the right, positive on the left. The bone-conduction to C (128) was — 14 secs. on both sides. The Edelhmann Galton-pfeife was 20,000 D.V. on the right, 50,000 D.V. on the left. By air-conduction the left ear heard from 2 C 32 to C<sub>4</sub> 2048, the right only C<sub>2</sub> 512 to C<sub>4</sub> 2048, with a questionable perception for C<sub>1</sub> 256. The right ear was tested with the left tightly packed with cotton-wool and covered.

As I was by no means satisfied with the result of this testing, although I had carried it out with every care, I asked Mr. Lake to test her also, which he kindly did on February 19, using the Bárány noise-producer to the left ear. This clearly demonstrated that the hearing of the right ear was really *nil*.

The results in this interesting case force one to ask the question, Did Mr. Hunter Tod's case really hear as reported; was it similar to the one under consideration? My patient is a very sharp and intelligent child and firmly believes that she can hear with her right ear. In this connection the remarks made by Mr. Lake<sup>1</sup> in his "Brief Note on Testing the Hearing with the Higher Tuning-forks, derived from Tests made in a case of Removal of the Necrosed Labyrinth, together with the Membranous Cochlea," are important. He mentions therein three cases in which, after removal of the cochlea, some hearing remained. These were reported by Randall and Goldstein. In Lake's own case he tightly closed the sound ear and attempted to determine to what extent the tuning-fork could be heard by it when the fork was held on the opposite side of the head. "The result of these observations

<sup>1</sup> *Trans. Otol. Soc. of Great Britain*, vol. lxxxviii.

was that no tuning-fork held thus could be heard below C<sup>3</sup>, and that if C<sup>3</sup> was struck sufficiently hard it would be heard by the sound ear to within thirty seconds of its ceasing to vibrate, and C<sup>4</sup> forty-five seconds. Deducting from this forty-five seconds the twelve seconds which were lost in air-conduction on the sound side, we have then left the fact that if a tuning-fork of high pitch is struck with too great violence, the sound may be perceived by the sound ear, and attributed to the diseased one, if the duration of its vibration is over thirty seconds, and this might apply also to lower-pitched tuning-forks, if they were struck so as to obtain overtones."

The case which I have described above has not, of course, lost her cochlea, but the labyrinth has received sufficient damage to render the equilibratory portion functionally inactive, and it is at least doubtful whether the cochlea remains intact. It is significant that careful testing gave the bone-conduction to be - 14 secs. *on both sides*. In cases such as these we *probably* have to deal with hearing entirely by bone conduction. Bárány's noise-producing apparatus here proves a useful adjunct to our tests, because its application eliminates any hearing by the ear into which it is placed.

Possibly a contributory factor in these cases is that the loss of one ear entails a complete loss of the sense of sound direction,<sup>1</sup> a sense which, in man, is poorly developed at the best.

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THE Thirty-first Annual Congress of the American Laryngological Association will be held at Boston, Mass., Monday, May 31, Tuesday, June 1, and Wednesday, June 2, under the Presidency of Dr. A. Coolidge, jun.

In the provisional programme we observe the following interesting items: Discussion on the Surgery of the Oesophagus, with papers, by Dr. H. P. Mosher, Dr. Chevalier Jackson, and Dr. S. J. Mixer. Joint meeting with the American Otological Association, when the following subject will be discussed, "Nasal and Pharyngeal Conditions as Factors in the Causation of Aural Disease." Papers will be read by representatives of both organisations. The Laryngological Association will be represented by Dr. C. G. Coakley and Dr. D. Braden Kyle.

The Council makes the following nominations: For Honorary Fellows (transferred from Corresponding Fellowship), Prof. Dr. B. Fraenkel, Berlin, Germany; Sir Felix Semon, London, England; and for Active Fellows, Dr. Albert C. Getchell, Worcester, Mass., thesis, "Naso-pharyngeal Fibromata"; Dr. Burt R. Shurly, Detroit, Mich., thesis, "An Investigation of Post-operative Conditions five to ten years after Intubation"; Dr. Greenfield Shuder, St. Louis, Mo., thesis, "The Anatomical and Clinical Relations of the Spheno-palatine (or Meckel's) Ganglion to the Nose and its Accessory Sinuses."

<sup>1</sup> Range, "Auditory Relief and Binaural Hearing," *Arch. Inter. de Laryngol.*, 1896.

## SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF  
MEDICINE—LARYNGOLOGICAL SECTION.

*Meeting on Friday, April 2, 1909.*

DR. DUNDAS GRANT, *President, in the Chair.*

*Abstract of Proceedings by DR. DAN MCKENZIE.*

The following cases and specimens were shown :

TWO CASES OF RETRO-BULBAR NEURITIS PROBABLY ATTRIBUTABLE TO  
SPHENOIDAL OR POSTERIOR ETHMOIDAL DISEASE.

BY DR. DUNDAS GRANT.

(a) A man, aged thirty-two, was kindly sent by Mr. Parsons on March 3 in view of the possibility of a retro-bulbar neuritis, which dated from February 17, being due to disease of the posterior sinuses of the nose. The only exceptional feature in the nose was an extreme hypertrophy of the middle turbinated body which intruded into a cavity on the right side of the nasal septum. Dr. Grant removed the anterior part of it. Previous to this no improvement had taken place in his vision, but three days afterwards he began to notice a slight improvement which steadily continued, and within a few days more he could read the upper four lines of the test types. On March 24 he stated he was able to read all the lines, and now he only noticed a slight want of lustre in coloured objects. How far in this instance the operative interference in the nose was the cause of the improvement it was difficult to say, but all that it could have effected would be a removal of pressure, and possibly thereby a relief of venous stasis. In view of the fact that improvement had been so considerable, Dr. Grant had not felt justified in carrying out more radical proceedings, although he had intended removal of the middle turbinal to increase the accessibility of the sphenoidal sinus.

(b) The patient, a man, aged thirty-eight, was first seen on December 4, 1907, for examination of the nose on account of retro-bulbar neuritis dating from the early part of the year, when he first noted a halo round the gas, and in two months was almost blind and unable to read any of the lines of test types. He con-

sulted Mr. Wray in September, and he sent him for examination of the nose. There was hypertrophy of both middle turbinated bodies; the posterior extremities of these were removed to make the sphenoidal and posterior ethmoidal cells accessible. Within two or three months he could read the largest test type. Very slight but steady improvement had continued and the patient could now read a newspaper without the help of glasses. A feeling of "pressure" disappeared after the operation, and the nose had been freer. The actual complicity of the posterior cells was doubtful.

Mr. SCANES SPICER drew attention to the work which had been done on the continent in connection with the association of optic neuritis with suppuration in the posterior sinuses of the nose.

Dr. C. O. HAWTHORNE, as one having no expert knowledge of rhinological disease, would have liked to know the exact nature of the abnormal conditions present in the sphenoidal sinuses in these cases and presumably relieved by operation. For in the first case, at all events, the record closely followed the natural history of many cases of retro-bulbar neuritis in which no suspicion of nasal disease existed and in which no operation was performed. While it was easy to see that nasal disease might extend to the orbit and might here or elsewhere affect in gross the optic nerve, it was somewhat difficult to understand how such disease should exercise a selective action and should confine its attack to the papillo-macular bundle, and so produce the clinical facts usually comprised in the term "retro-bulbar neuritis." Perhaps in any such discussion as the present it might be well also to bear in mind that retro-bulbar neuritis had occasionally a wider relation than either rhinology or ophthalmic surgery; in a certain number of instances it had been observed as a fact, and sometimes as an early fact, in the evolution of disseminate sclerosis.

Mr. HERBERT TILLEY had had all his sphenoidal sinus cases examined with the ophthalmoscope for some considerable time but had never seen a single case of optic neuritis associated with sphenoidal sinusitis. He had, of course, observed eye changes following nasal suppuration through the infection being conveyed by the nasal duct to the lacrimal sac. He had recently been studying an excellent paper by Kuhnt, of Heidelberg, which contained much interesting material on this point.

Mr. CLAYTON FOX asked if any suppuration in the posterior ethmoidal cells had been observed in Dr. Grant's cases, because it had been stated that as these cells were in closer relationship to the inner wall of the optic foramen than the sphenoidal sinus, infection of the orbital cavity more readily arose by extension from them than from the sphenoidal sinus.

Mr. WESTMACOTT related a case in which a unilateral retro-bulbar neuritis disappeared after the free opening of the antrum of the opposite side. He considered the result a mere coincidence, and in reply to Dr. Dundas Grant said there was no sign of posterior ethmoidal suppuration.

Dr. DUNDAS GRANT stated that the condition of the sphenoidal cells was not sufficiently obvious for him to say that the retro-bulbar neuritis was certainly dependent on suppuration in them. He expressed his appreciation of Dr. Hawthorne's suggestions, and pointed out that the bone between the sphenoidal or posterior ethmoidal cells and the optic nerves was often extremely thin, and sometimes even dehiscant. He also referred to Onodi's paper in the JOURNAL OF LARYNGOL., RHINOL.,



AND OTOL. (vol. xxii, p. 382) on contra-lateral optic neuritis in cases of suppuration in the posterior ethmoidal cells, the cell on one side sometimes extending over or behind the sphenoid and reaching to the opposite side. If the bone on this opposite side was thin or dehiscant, inflammation in the cell might produce contra-lateral optic neuritis. Dr. Grant thought that in Dr. Westmacott's case this anatomical peculiarity might be present, and that the posterior ethmoidal cell might have suffered along with the antrum.

MR. SCANES SPICER drew attention to an excellent article with diagrams on the subject by Dr. Watson Williams, which had appeared in the *Medical Annual* for 1909.

#### CASE OF ANGIO-NEUROTIC ŒDEMA.

BY DR. DUNDAS GRANT.

The patient, a gentleman, aged twenty-nine, had just come under observation on account of swelling of the face which came on somewhat suddenly about two months ago. It then occupied the whole of the forehead, and there was some loss of sensation in the swollen region. It had spread over the whole of the right side of the face and part of the left along with the nose. It was reported to have disappeared at one time for five days, and then to have appeared again after a sleepless night. There was also a white vesicle on the right pharyngo-epiglottic fold, but no symptoms seemed to have arisen from it. At the time of the onset of the facial swelling the patient was suffering great mental distress due to domestic causes; he had also a tendency to bleed and to bruise very readily, and his gums were pale and spongy. There was no history of swellings or hæmorrhages in any other part of the body. The coagulation-time of the blood was three times greater than normal, and the hæmoglobin amounted to 90 per cent. of the normal. There was slight excess of lymphocytes, but otherwise nothing remarkable.

DR. BALL asked whether the little tumour on the ary-epiglottic fold was a vesicle or a little cyst.

DR. GRANT considered it more like a collapsed vesicle.

DR. JOHNSON HORNE thought that the history of the case did not suggest angio-neurotic œdema. The onset had been too rapid, and the œdema too limited and permanent. In the angio-neurotic variety the œdema lasted for some time, no doubt, but showed a marked tendency either to wander about or to clear up altogether.

DR. GRANT asked whether Mr. Tilley could give the subsequent history of a case of œdema in the frontal region he once brought before the Laryngological Society.

MR. HERBERT TILLEY remembered the case referred to, but remarked that subsequent to its exhibition the swelling was found to have had a parasitic origin, and was not of the angio-neurotic type.

MR. T. P. BEDDOES asked whether the case had been treated by anti-

septics locally, and whether alternatives had been administered with the view of improving the condition of the digestive system, which was out of order, as the furred teeth and indented tongue showed. Regarding the local condition it was undoubtedly œdema, but whether it was angio-neurotic œdema was questionable.

Dr. GRANT, in reply, stated that he had recommended the administration of calcium salts.

#### CASE OF RHINITIS CASEOSA.

By Dr. DUNDAS GRANT.

The patient, a woman, aged forty-two, complained of great pain and obstruction on the left side of the nose with slight purulent discharge, and a slight degree of boggy swelling over the superior maxilla. On first inspection there was found in the nose a ragged, red, very unhealthy looking granulating mass, which gave an impression that the case was one either of malignant or of tertiary specific disease. She was ordered iodide of potassium, and a portion of the obstructing mass was removed for microscopical examination. She was not seen again for about six weeks, when Dr. Grant observed beyond the red mass a quantity of putty-like material and recognised the condition as one of rhinitis caseosa. The mass was cleared away by means of Higginson's syringe with a Eustachian catheter, and relief was immediate. The cheesy mass consisted of broken-down pus, and the case illustrates the satisfactory feature that the result of this simple treatment is effective as regards both temporary and permanent benefit, recurrence being scarcely known.

Dr. DONELAN asked if the antrum had been explored.

Dr. GRANT replied that he had punctured the antrum and found it free from pus.

ADDITIONAL NOTE TO THE "CASE OF MALIGNANT DISEASE IN THE LEFT PYRIFORM SINUS" (SHOWN AT THE MEETINGS OF THE LARYNGOLOGICAL SECTION ON NOVEMBER 6, 1908, AND FEBRUARY 5, 1909).

By Sir FELIX SEMON, K.C.V.O.

The patient, who will be in attendance, has just returned from Switzerland in the best of health, with powers of voice and swallowing fully restored. The left vocal cord has begun to resume its normal movements, thus showing that the interference with its movements, whether it was due to mechanical impairment or to lesion of the recurrent laryngeal nerve, must have been of transitory nature. There was no evidence of any recurrence.

The PRESIDENT congratulated Sir Felix Semon on the excellent result he had obtained.

## CASE OF THYROID TUMOUR AT THE BASE OF THE TONGUE (EXHIBITED AT THE LAST MEETING).

BY MR. STUART-LOW.

Now shown after removal, with specimen, microscopic slide and illustrations.

Under chloroform anaesthesia laryngotomy was performed, and the pharynx being firmly plugged with a captive sponge, the anaesthetic was administered through this tube. The tongue, well protruded from the mouth by means of two deeply inserted stout silk cords, was split from tip to base, and so the tumour, the size of a small Tangerine orange, was effectively exposed. The growth was found to be solid and enveloped in a very firm thick capsule; it occupied nearly all the region of the base of the tongue, the structures being so stretched and attenuated over it that there was considerable danger of the whole tongue coming away during the extrusion of the mass. Part of the capsule, very deeply situated near the hyoid bone in the vicinity of the thyro-lingual duct, had to be resected, but this was first thoroughly curetted, and the surface well rubbed with a 60 gr. to the ounce solution of chloride of zinc. The tongue was then stitched up from tip to base with interrupted sutures of chromicised catgut, except in the last half inch, above and below which was left open for drainage. Rectal feeding was employed for two days, and a spray of peroxide of hydrogen used for the month. She made an uninterrupted recovery, and left the hospital on the sixth day. The tumour proved to be of a thyroid-adenomatous nature.

The PRESIDENT congratulated Mr. Stuart-Low upon the result and the picture.

## A CASE OF PHARYNGO-KERATOSIS OF FIVE MONTHS' DURATION IN A MAN, AGED THIRTY-FOUR; THE SECRETION IS SWARMING WITH DIPHTHERIA BACILLI.

BY DR. H. J. DAVIS.

The case was a very important one owing to the fact that the patient was head master of a large orphanage (in the suburbs) containing 250 children of both sexes, their ages ranging from six to fourteen years.

In November last the patient had an attack "of follicular tonsillitis, which had never got well in spite of active treatment."

He was sent by his medical adviser in February last. The condition was typical of pharyngo-keratosis. There were white spots on both faucial tonsils, both lingual tonsils, the pharynx and palate; there were no symptoms beyond slight soreness. The patient was a man of splendid physique; he said he felt perfectly well, but he looked pale. A microscopic examination of the secretion showed presence of "Klebs-Loeffler bacilli" in large numbers, and the pathological report was "diphtheria." The patient was at once isolated, and had had five injections of anti-toxin and there had been no amelioration in the condition.

The medical officer to the orphanage reported that during the last four months there had been outbreaks of tonsillitis among the children, about forty being affected, but though some cases were very suspicious there was no membrane. He sent the exhibitor swabs from three children the last affected, and the pathological report was "diphtheria," and they were certified as such. No cases of paralysis had occurred, but since the patient's isolation "the outbreak of sore throats has ceased." The patient himself had diphtheria eighteen years ago.

In view of the now generally accepted theory that no treatment was of any avail in pharyngo-keratosis the question arose as to what was to be done in such a case as this: The area affected was very large, the lingual and faucial tonsil crypts were plugged with secretion containing diphtheritic bacilli in large numbers, and though in a quiescent state in the patient they were capable of producing diphtheria in others, as evidenced by the outbreak. The patient really had chronic diphtheria. The exhibitor had suggested diphtheritic vaccine injections, but understood that this was not feasible. Any suggestions, in view of the importance of the case, were welcomed. Microscopic slides relating to the above cases were shown.

Dr. DAVIS added that every kind of local treatment had been tried with no result. He had cauterised the tonsillar crypts and had succeeded in thus preventing a re-formation of the secretion.

Dr. BARRY BALL asked what the patient had been supposed to infect the school with. He was rather of the opinion that the outbreak in the school had occurred first, and that the patient's throat had become the seat of the diphtheria bacilli subsequent to the school epidemic.

Dr. DAVIS had had the usual routine bacteriological examination made of the secretion from the patient's tonsils when first he saw him. The report that *B. diphtheriae* had been found came as a surprise to him, but the school doctor, to whom he communicated the finding, looked upon the patient as the source of infection which had set up the epidemic and isolated him, with the result that the epidemic ceased. The diphtheria bacillus had, of course, no connection with the keratosis. The

patient's statement was that he had been infected by a child. His condition was an unfortunate one because he might be asked to resign.

Mr. CLAYTON FOX remarked that assuming that the bacillus found was the true *B. diphtherie*, the patient himself was immune to the disease and if the keratosis was cured—as it easily might be by *morcellement* of the tonsils followed by the galvano-cautery—the bacilli would probably disappear.

Mr. HARMAN had had under his care on one occasion a nurse suffering from pharyngo-mycosis, in whom bacilli were found which could not be differentiated from the bacillus of diphtheria save by the sugar test. But when that test was employed the organisms were found to be not the bacilli of diphtheria. The patient was not isolated and the disease was ultimately cured by exposure to the X rays directed into the pharynx through a speculum.

Mr. ATWOOD THORNE asked whether guinea-pigs had been inoculated with the organism.

Dr. PETERS said that unless the guinea-pig test was employed one could not be sure that the organisms were those of diphtheria.

Dr. HEMINGTON PEGLER had once seen a boy who had had diphtheria and in whom the bacilli persisted for eight weeks, during which time the boy was kept in isolation. Dr. Pegler found enlarged tonsils and adenoids, and on their removal, the bacilli disappeared, consequently he agreed with Mr. Clayton Fox, that an effort should be made to get rid of the keratosis by *morcellement*.

Sir FELIX SEMON said the first point to be decided was, Were the organisms those of diphtheria or not? The children in the school had suffered only from "tonsillitis" it was reported. Consequently the first step to be taken was the inoculation of guinea-pigs. If the patient was not harbouring infectious germs the keratosis could be successfully treated by a change of air coupled with a good tonic. But, of course, if he was infectious this treatment would not be possible. So, from every point of view, immediate decision by inoculation was called for.

The PRESIDENT said he thought the pharyngeal tonsil shared in the general condition with the other tonsils. By posterior rhinoscopy he could see several white specks in the pharyngeal tonsil. The tonsil was enlarged and there was one focus which had not yet been cleared up. He agreed that *morcellement* was the proper treatment, and treatment of the lingual tonsil might follow by any of the methods, such as a saturated solution of salicylic acid applied locally. The patient seemed to be rather a carrier than a sufferer from diphtheria. No doubt he had pharyngo-keratosis before he got the bacilli, and the co-existence of the two conditions was accidental.

Mr. SECCOMBE HETT remarked that the lingual tonsil should be removed at the same time that the palatine tonsils were inoculated.

Dr. DAVIS, in reply, pointed out that proof of the patient harbouring the true bacillus of diphtheria was present in the cessation of the school epidemic after he had been isolated. The keratosis could be cured, but even then the bacilli might still remain.

#### CASE FOR DIAGNOSIS.

By DR. H. J. DAVIS.

Girl, aged eighteen, attending West London Hospital, and sent to me by Mr. Archibald Smith, with growth on the left side of the

tongue. No pain, but inconvenience in swallowing and speaking. The growth was of most unusual size and extended along the left margin of the tongue, from the middle of its length backwards, and curving towards its middle, in front of the epiglottis and partially obscuring the glottis. The cords were normal. The growth did not infiltrate the tongue and there were no glands.

Dr. BARRY BALL said the case, though more extensive, was like one he had shown at the Society some years ago, which presented a papillomatous appearance. Mr Butlin diagnosed it as localised macroglossia.

Mr. HERBERT TILLEY asked whether a search had been made elsewhere on the body for enlarged glands or tumour formation. The patient, in reply to a question of his, had said that there was a localised swelling or tumour on the outside of the thigh.

Dr. HILL was sure that the tumour on the tongue was not simple macroglossia, because it presented cysts, or what looked like cysts, in parts. One of the cysts was large and the rest small.

Mr. W. STUART-LOW could get his fingers round the tumour. From its appearance he thought it was a cystic lymphatic tumour, of the nature of hygroma. He suggested that the same operation should be employed for its removal as he had performed in the case previously exhibited at this meeting, which consisted in splitting the tongue, working back to the tumour and shelling it out.

Mr. CLAYTON FOX observed that the bulk of the swelling lay in the region of the foramen cæcum. Consequently he was of opinion that it might have originated in the thyro-lingual tract as in Mr. Stuart-Low's case. The tumours had, perhaps, formed in the middle line and spread out laterally in its growth.

The PRESIDENT considered the condition comparable to a lymphatic nævus.

Mr. ARCHIBALD SMITH had suggested the exhibition of the case because of its exceptional character. According to the mother of the girl it was not present at birth. It was first noticed when the patient was eight years of age, and although no definite information could be obtained as to its size when first seen there was a clear history that it had enlarged since then. He was not prepared to state a definite opinion on the nature of the tumour, but he inclined to the belief that it was lymph-angiomatous or lipomatous in its nature. He did not think that it was a thyroid tumour.

#### THE CASE OF PRIMARY TUBERCULOUS GRANULOMA OF THE SEPTUM IN A WOMAN, AGED FIFTY-FOUR, FROM WHICH SECTIONS WERE SHOWN AT THE JANUARY MEETING.

By DR. PEGLER.

A re-growth of the disease had taken place; on the left side, where formerly there was a lobulated tumour, there was now a small sessile body the size of a filbert kernel, in front of the small perforation. On the right side the deflected cartilage was much thickened and studded over with tubercles. The perforation

passes through the centre of this mass. General health as previously reported. Microscopical sections of primary growth were again shown.

Mr. HERBERT TILLEY drew attention to the frequent presence of a small lymphatic nodule in the cheek, over the masseter, in cases of tuberculosis of the nose. He had first been made aware of this feature from the work of a French author, who had come to the conclusion that lupus affecting the cheek generally began in this gland secondarily to the disease in the nose.

#### CASE OF LARYNGEAL AND BUCCAL DISEASE PRESENTING UNUSUAL FEATURES.

BY DR. JOHNSON HOENE.

The patient, a man, aged thirty-nine, had had sore throat since April, 1908. Onset gradual; in November, 1908, mucous plaques on lateral parts of pharynx, buccal cavity and oral surface of epiglottis. Right vocal cord in posterior third had been affected. Improvement under mercury and iodide of potassium.

The PRESIDENT said it would be agreed that the epiglottis was in a most unusual condition; it looked like a mucous plaque of singularly symmetrical form.

#### A CASE OF PARALYSIS OF THE RIGHT CORD, RIGHT STERNO-MASTOID, TRAPEZIUS, SOFT PALATE, AND PHARYNX (SPINAL ACCESSORY), WITH DEAFNESS ON THE RIGHT SIDE COMING ON LATER, IN A MAN, AGED THIRTY-TWO.

BY DR. FRED. SPICER.

The patient was a traveller. He had always enjoyed good health until about January 14 last. He then began to complain of a sore throat and weakness in his voice, with inability to swallow, and pain on right side of head, right shoulder and right arm. He was treated by his local doctor and a nerve specialist, but getting no better was sent up to London, and when first seen, on March 4, was very much in the same condition as now. There was no history of syphilis, nor injury. Since then he had been treated with iodide of potassium and mercury, with massage and electricity. During the last week nerve deafness on the right side had appeared.

Dr. DONELAN said that there was a history of an attack of influenza in November, and suggested that the paralysis might have been influenzal in origin.

MR. CLAYTON FOX had hoped that there was deafness, but its insertion was a mistake. This group of symptoms, "Schmidt's syndrome," was due, he thought, to a lesion of the nerve at the spot where the spinal root joined the accessory root from the vagus. Although there was no history of syphilis the most likely cause was a syphilitic meningitis.

SIR FELIX SEMON said he was no Chauvinist, but he did wish to enter a protest in the name of British Medicine against the appellation "Schmidt's or Aveli's syndrome," for the condition had been described by Dr. Hughlings Jackson and Sir Morell Mackenzie as long ago as 1870, and, if a name was given to the symptom group at all, it should be the "Hughlings Jackson-Mackenzie syndrome."

DR. F. SPICER said the note as to the deafness was an error. The lesion was undoubtedly one of the spinal accessory.

### CASES OF LUPUS.

BY MR. H. W. CARSON.

Female, aged twenty-seven, under observation four and a half years. Lupus of epiglottis, larynx, pharynx, uvula, and soft palate. Shown to Laryngological Society, December, 1904. February 2, 1905: Curettage and partial removal of uvula for dysphagia. May 25, 1905: Epiglottis amputated. June to October, 1905: In hospital with abscess of lung. During the last two years there had been a steady improvement under tuberculin injection, with local applications of lactic acid, and the case was now practically cured.

Female, aged twenty. Duration of disease four years. Lupus of faucial pillars and uvula; larynx unaffected. Tuberculin injection since February 19, 1908, with lactic acid locally,  $\frac{1}{1000}$  mgrm. every three weeks for seven months, increased to  $\frac{1}{50}$  mgrm. for four months, when condition relapsed; dose reduced to  $\frac{1}{1000}$  mgrm.

Female, aged ten. Duration of disease eight years. Lupus of soft palate, pillars of fauces, posterior pharyngeal wall, epiglottis, larynx, nasal septum. Treated as out-patient except for short period when she was admitted for tracheotomy, which was not done. Treated by tuberculin injection and lactic acid locally. Practically healed now, but owing to scarring there is much deformity and some stridor.

Male, aged fifteen. Duration of disease ten and a half months. Father said to be phthisical. In addition to the throat condition the patient has skin lesions, diagnosed as tuberculous by a dermatologist. Had been under treatment for six weeks.

DR. JOHNSON HORNE asked if there was any pulmonary tuberculosis in the first case because the larynx was suspicious.



Dr. PEGLER drew attention to a lack of mucus in the nose of the children.

Mr. HERBERT TILLEY supported Dr. Horne in expressing suspicion of the larynx. The interarytenoid fold was swollen in a very suggestive manner.

Mr. HAROLD BARWELL agreed with Dr. Horne and Mr. Tilley regarding the first case. He congratulated Mr. Carson on the results of his tuberculin treatment, but observed that many cases of lupus of the fauces and larynx got well under simple treatment by fresh air, good feeding, and arsenic internally, assisted by curetting locally. These cases, indeed, were apt to get well, though some were very extensive. Consequently he could not agree that the good results Mr. Carson had obtained could be confidently ascribed to the influence of tuberculin.

Mr. CARSON said the first case had had an abscess in the lung some years ago and then tuberculosis had been suspected. But the patient was now in excellent health and the lungs were free from abnormal signs. The swelling in the interarytenoid space had remained the same for the last three years. Three of the cases had shown a positive Calmette reaction after the tuberculin injections.

The PRESIDENT stated that in a case observed at the Central London Throat and Ear Hospital Calmette's test had proved negative, but that a reaction in the conjunctiva occurred when, a few days later, an injection of tuberculin was made.

#### CASE OF FIXATION OF THE LEFT CORD, WITH SWELLING OF THE LEFT ARYTENOID REGION.

BY Drs. DUNDAS GRANT AND DAN MCKENZIE.

The patient, a woman, aged fifty-four, came to hospital eight months ago suffering from hoarseness. The left cord was seen to be fixed in abduction, but no cause could at that time be found to account for the fixation. Two months ago swelling of the left arytenoid region was noticed for the first time, and since then had undergone a steady increase in size. At the time this note was written the arytenoid swelling formed a rounded tumour involving the pharyngeal rather than the laryngeal aspect of the region, so that it projected into and almost entirely obliterated the left hyoid fossa. By hypo-pharyngoscopy one was able to see that the tumour was not strictly confined to the left arytenoid region, but that, having traversed the middle line, it encroached a little upon the right arytenoid region. The surface of the tumour was rounded, and perhaps nodular. The mucous membrane covering it was nowhere broken by ulceration, as far as could be seen on examination both by the direct and indirect methods. No enlarged glands had been discovered, and the patient had never suffered from rheumatism. Syphilis could be excluded by the fact that she had been taking potass. iodid. for six months.

Opinions respecting the nature of the tumour, or suggestions as to measures likely to further diagnosis or treatment, were invited.

Dr. H. J. DAVIS suggested that the cause of the fixation of the cord, which he thought to be in the abducted position, was malignant disease. The swelling in the hyoid fossa was oedematous.

Sir FELIX SEMON said that surely the cord was in the adducted, not abducted position, because when the cord was abducted there was complete aphonia, and this patient had a perfectly normal voice.

Mr. PETERS observed that the cord was tense, a sign that it was adducted and not abducted.

Mr. HAROLD BARWELL said the cord was fixed in the middle line. The swelling looked as if it went further down, and gave him the impression of being the upper end of an epithelioma on the upper edge of the cricoid plate.

Dr. HILL protested that the term "hypo-pharyngoscopy" was highly improper. The method should be called "deep pharyngoscopy." He asked if the case had been examined by the direct method.

The PRESIDENT asked for opinions, first as to whether the fixation was mechanical or paralytic, and second as to whether, in the probable event of the former being the case, the disease was malignant or not.

Dr. DAN MCKENZIE said that he (and not Dr. Grant) was responsible for the statement that the cord was fixed in abduction. He was still of that opinion, and did not think the patient's voice was normal. Examination by the direct method had failed to reveal any sign of epithelioma in the hypopharynx or œsophagus. He was puzzled to explain the nature of the swelling and would show the case again at a later date.

SPECIMEN REMOVED BY SOLIS-COHEN'S METHOD OF TOTAL LARYNGECTOMY FROM A FEMALE WHO HAD PRIMARY PARTY-WALL CANCER OF THE LARYNX (*i.e.* TRULY INTRINSIC IN ORIGIN).

By DR. WILLIAM HILL.

This afterwards spread whilst under observation from the inter-arytanoid region to the left vocal cord anteriorly, and became extrinsic by invading the contiguous pharyngeal mucosa posteriorly. As the operation was performed so recently as March 17 the patient will probably not be sufficiently recovered to be shown. The operation was performed by Mr. Clayton Greene.

A FOREIGN BODY REMOVED FROM THE POSTERIOR ŒSOPHAGEAL WALL AT THE LEVEL OF THE DIAPHRAGM.

By MR. SECCOMBE HETT.

As the foreign body lay in the mucous membrane with its head directed downwards the œsophagoscope passed it without its being seen on the first inspection.

## BRITISH MEDICAL ASSOCIATION.

*Sheffield, July, 1908.*

## SECTION OF OPHTHALMOLOGY.

## DISCUSSION ON THE RELATION OF DISEASE OF THE ACCESSORY NASAL SINUSES TO DISEASES OF THE EYE.

I.—A. LOGAN TURNER, M.D., F.R.C.S. Ed., F.R.S.E.,

Lecturer on Diseases of the Ear and Throat, University of Edinburgh; Surgeon,  
Ear and Throat Department, Royal Infirmary.

IN discussing the question of diseases of the eye in association with affections of the nasal accessory sinuses, it seems more appropriate to regard the latter cavities as accessory to the orbit than as accessory to the nasal chambers. If we study the nasal sinuses from this aspect, we cannot fail to be struck with the intimate relation which they bear to the walls of the orbital cavity. Not only is this relation one of close juxtaposition in which the bony wall of one is common to the other, but the intimacy is still further increased by the fact that there is a direct intercommunication between the veins of the nasal cavities and the accessory sinuses on the one hand, and the venous trunks of the orbit on the other hand. It is possible, too, that a similar relation may exist between the lymphatic vessels of certain of the air cavities and the orbit, though no direct anatomical proof of this connection appears to have yet been established. With so close an anatomical relationship, it is not difficult to understand how septic processes involving the nasal chamber and its neighbouring cavities may lead to secondary infection of the contents of the orbit.

When we study the accessory sinuses from the nasal aspect it is customary to classify them as follows:

An anterior group of sinuses, consisting of the antrum of Highmore, the frontal sinus and anterior ethmoidal cells, all of which communicate with the middle meatus of the nose, and which, with the exception of the antrum, occupy a position more directly in relation to the anterior half of the nasal chamber only; a posterior group of sinuses, consisting of the posterior ethmoidal cells and sphenoidal sinus communicating with the superior meatus of

the nose and the sphenoidal recess above it, and lying in relation to the posterior part of the nasal cavity.

If these sinuses are now studied in relation to the orbit and regarded as accessory to that cavity, the same grouping may, in a sense, be preserved. Thus, anteriorly, the frontal sinus and anterior ethmoidal cells may occupy to a varying extent the roof of the orbital cavity in its anterior part. The anterior ethmoidal cells are in intimate relation to the anterior part of the inner orbital wall, while the maxillary sinus lies both anteriorly and posteriorly beneath the orbital floor. In relation to the posterior part of the orbit, we find that the posterior ethmoidal cells and sphenoidal sinuses have a constant relationship to its inner wall. Occasionally a large posterior ethmoidal cell intervenes between the antrum and the floor of the orbit, while the roof of the orbit close to its apex may be slightly invaded by an exceptionally developed posterior ethmoidal cell.

If we proceed a step further, and study the relation of the sinuses to the orbital contents, it is possible to maintain this grouping in connection with certain orbital and ocular phenomena which may have their origin in pathological conditions of the sinuses. Thus, when we meet with displacements of the eyeball, swellings in the inner and upper part of the orbital cavity and peridacryocystitis, the attention should be directed to the frontal sinus, anterior ethmoidal cells and maxillary sinus. On the other hand, the existence of retrobulbar neuritis, optic atrophy, and paralysis of ocular muscles may result from diseases of the posterior ethmoidal and sphenoidal sinuses. In other words, affections of the anterior group of sinuses may be responsible for bulbar affections, while pathological conditions of the posterior group may be the cause of certain retrobulbar affections. It is true that a classification of this kind does not include all the ocular affections that may be secondary to diseases of the nasal accessory sinuses, nevertheless it forms a sufficiently useful working basis both for the ophthalmologist and the rhinologist.

[Dr. Turner then threw on the screen a series of plates illustrating the variations met with in the development of the nasal sinuses, namely, the varying extension of the frontal sinus and ethmoidal cells into the roof of the orbit, and the occasional extension of one frontal sinus into the roof of both orbits; the varying relations between the posterior group of sinuses and the nerves entering the orbit through the optic foramen and sphenoidal fissure. After demonstrating the normal relation of the sphenoidal sinus to the

optic nerve and the motor and sensory nerves in the wall of the cavernous sinus, he showed how the posterior ethmoidal cells might invade the sphenoid bone, occupy the position of the sphenoidal sinus, and thus assume the relations of that cavity. It was further shown that the posterior ethmoidal cells and sphenoidal cavity of one side might come into relation with the optic and oculo-motor nerves of the opposite side. It was shown that the venous return from all the accessory sinuses passed into the cavernous sinus, that from the frontal, ethmoidal, and maxillary cavities being conveyed through the orbital cavity by the superior and inferior ophthalmic veins. The close relation of the tear sac to the anterior ethmoidal cells and antrum was also demonstrated, and a number of plates illustrating various pathological conditions of the sinuses with secondary orbital manifestations were exhibited.]

H.—GEORGE MACKAY, M.D., F.R.C.S.E.,  
Ophthalmic Surgeon, Edinburgh Royal Infirmary.

During the past thirty years, but more especially in the past decade, there has been put on record, in ophthalmic and rhinological literature, much evidence which goes to prove not only that a large proportion, perhaps the majority, of cases of idiopathic orbital cellulitis and of orbital abscess have their origin in diseases of the nasal accessory sinuses, but also that a considerable number of maladies affecting the textures of the eyeball and its appendages in a more solitary manner may at times be traced to the same source as direct or as reflex disturbances. In view of the fact that the references to this literature in our text-books on diseases of the eye are as yet very scanty, it may, perhaps, here be permissible to mention our indebtedness to the monograph of Eversbusch, published in 1903, and to the later contribution by Birch-Hirschfeld on "Diseases of the Orbit" (1907), which forms part of the ninth volume of the slowly appearing second edition of the "Handbuch of Graefe-Saemisch." The patient researches of Onodi have added largely to our knowledge of the anatomical peculiarities of these parts, and in his recently published work, "Der Sehnerv und die Nebenhöhlen der Nase" (1907), he has brought together also a large number of clinical references of the highest value to every student of this subject. Many briefer communications have appeared within recent years. In the meantime many of us are indebted to the editors of *The Ophthalmoscope* for the

attention which this subject received from them in the April number of that journal.<sup>1</sup>

#### MUCOCELES AND SINUSITIS.

With the assistance of Dr. Logan Turner, and following up a useful suggestion contained in a paper by Holmes, of Cincinnati, there has been prepared a synopsis, which is here appended, of the chief characteristics of mucocoeles.

*Group I: Mucocoeles.*—Each of the accessory sinuses lined with a mucous membrane, continuous with that of the nose, should ventilate freely into the naso-pharynx. When by occlusion of its normal outlet any sinus becomes filled with retained secretion, the contents may apparently remain sterile for years, and simply distending the cavity constitutes the condition termed "mucocoele." That part of the sinus wall which adjoins the orbit tends to compress the orbital contents, and to thrust them in the direction of least resistance. Just as with hypertrophies and neoplasms in other parts of the body, the slower the growth the less the distress occasioned to the patient. Rigid tissue, such as bone, tends to become thinned by atrophy and absorption, while more flexible and elastic textures (for example, the lids) submit to a gradual displacement, and by stretching, combined with passive congestion, undergo some degree of hypertrophy. Thus it commonly happens that the orbital symptoms of mucocoele are often comparatively trivial until deformity, notably extrusion or displacement of the eyeball, with or without diplopia, draws attention to the presence of the abnormality.

It is doubtful whether the *antrum* or *frontal sinus* is sufficiently developed in very young children to permit of a mucocoele forming in either cavity in early life.

Opinions differ as to the *relative frequency* of frontal and ethmoidal mucocoeles. Accurate statistics are wanted, and if forthcoming to-day will be welcome.

*Pain and tenderness* are usually slight or absent.

<sup>1</sup> List of articles in the *Ophthalmoscope*, April, 1908: "The Frequency of Orbital Manifestation of Nasal Sinusitis," by Dr. StClair Thomson. "The Ocular and Orbital Complications of Disease of the Accessory Nasal Sinuses," by Dr. J. Jameson Evans. "A Study of Thirty-six Consecutive Cases of Optic Neuritis," by Dr. H. Manning Fish. "Malignant Disease of the Accessory Sinuses," by Dr. Sydney Stephenson. "The Applied Topographical Anatomy of the Sinuses Accessory to the Nasal Cavities," etc., by Mr. J. Howell Evans. "Empyema of the Maxillary Antrum followed by Orbital Cellulitis and Atrophy of the Optic Nerve," etc., by Dr. Toulais.

*Swelling* in the affected region is the most prominent sign, and there is often no visual disturbance unless it be diplopia.

The essential *treatment* must be surgical, and involves endo-nasal methods.

There may, however, be present to-day colleagues who will find in this group points worthy of discussion, but the succeeding groups appear to be more attractive.

*Group II: Sinusitis*, acute or chronic, accompanied by obvious external signs of orbital cellulitis, abscess formation, tumour growth, cedema of lids, or apparent dacryocystitis. Each of the sinuses communicating with the upper respiratory passages is liable to similar bacterial infections, for instance, acute catarrh (coryza), influenza, pneumococcic, streptococcic, diphtheritic and erysipelatous invasions, as well as more chronic tuberculous and syphilitic affections. In the case of the antrum the irritation may be induced by decayed teeth, while any of the sinuses may be involved in injuries, or give lodgment to neoplasms, benign (including osseous) or malignant. In the catarrhal and suppurative conditions the discomfort and danger to the patient are minimised so long as the secretions can escape into the nose or pharynx. This is well illustrated in cases where a spontaneous discharge of secretion is followed by a sense of relief, and in some instances (for example, some frontal cases) evacuation can be assisted by mechanical pressure upon the sinus wall. As Holmes points out, the anatomical position of the outlet of each sinus, except the frontal, is situated above the level of the floor of the cavity, so that mucus and secretions can readily accumulate and decompose *in situ*, without occlusion of the ostium. We may thus have either an open or a closed empyema of any of the sinuses, and in some cases the inefficient surgical treatment of a mucocoele may lead to its becoming an empyema. The more acute the infection the greater the liability to thrombotic and necrotic processes in the surrounding tissues. We have no further need of witnesses to prove that cerebral abscesses, intra-dural and extra-dural, that thrombosis of the cavernous sinus, and that orbital cellulitis and abscess may each or all result from empyema of any one of the accessory sinuses.

#### EMPYEMA OF THE ACCESSORY SINUSES.

In the second synoptical table are indicated the chief characteristics of empyema of the accessory cavities.

Acute cases are characterised by more rapid onset of symptoms,

more pain and tenderness at the seat of the affected sinuses and in some instances general pyrexia, but the diagnosis is based on lines similar to those described in chronic suppuration. -

While empyema of the antrum is probably of more frequent occurrence than any other it is almost certainly not the most frequent cause of orbital complications. There appear to be hardly any reliable statistics available either as to the relative frequency with which orbital abscess arises from sinus disease as compared with other causes, or as to the order of precedence of the sinuses in the frequency of its production.

Birch-Hirschfeld<sup>1</sup> has recently stated, as the result of a careful analysis of the records of the Leipzig Eye Clinic, that out of 684 cases of orbital inflammation no less than 409 (59·8 per cent.) were due to accessory sinus inflammation, and he suggests that the number would probably have been still higher if the nose and accessory sinuses had always been examined. In 129 cases (29·8 per cent.) the frontal sinus was the starting-point of the disease, in 89 cases (21·8 per cent.) the maxillary sinus, in 83 cases (20·5 per cent.) the disease started from the ethmoidal sinus, and in 25 cases (6·1 per cent.) from the sphenoidal sinus. In 60 cases (14·7 per cent.) several sinuses were affected, thus, 25 times both frontal and ethmoidal suffered together, 12 times ethmoidal and maxillary, and 10 times ethmoidal and sphenoidal were associated.

There is room for discussion, and information is desirable as to the way in which the inflammation is conveyed from the sinus wall to the orbital contents. The possibilities include septic thrombosis, or thrombo-phlebitis, or lymphangitis, or a gradual erosion of the bony partition by periostitis and an eruption through the periosteum into the orbital cellular tissue. Sometimes a subperiosteal abscess forms without perforation of the orbital periosteum (case of Miss R—), the pus burrowing forwards to the orbital margin or backwards towards the apex of the orbit. The pathological study of these cases has a very practical bearing on the treatment, because if the pus is lodged between the orbital wall and the periosteum it should, if possible, be evacuated by an incision which does not open up the orbital cellular tissue, but seeks the pus by following the bony wall from the anterior orbital edge.

Some may wish to discuss to-day the best means of arriving at a differential diagnosis between cases of orbital cellulitis arising from sinus disease and those due to other causes—for instance, tuberculous and syphilitic periostitis. The appropriate treatment

<sup>1</sup> *Klin. Monatsbl. für Augenh.*, January, 1908, p. 3.



may also engage attention. The chief signs upon which the rhinologists depend for the diagnosis of sinus disease and for the differential diagnosis of the various cavities affected are set forth in Table II of the synopsis.

But empyema may be present and yet give no outward and obvious suggestion of its existence. There may be no definite nasal complaint; there may, indeed, be denial of nasal symptoms. And when even trained rhinologists cannot always make us assured of its presence or absence, or can only develop their convictions after repeated examinations, it is not much to be wondered at that ophthalmic surgeons in the past have often failed to attribute to sinus disease cases which have only been characterised by visual disturbances with or without ophthalmoscopic changes.

The most interesting and varied cases are to be met with in the next group—*Group III, Sinusitis*—without external signs of orbital inflammation, but (*a*) with ophthalmoscopic signs such as optic neuritis, neuro-retinitis, retinal thrombosis, or phlebitis, etc. The anatomical relations and the vascular connections of the nasal cavities with the nerves and blood-vessels about the apex of the orbit make it easy to explain such occurrences, and the monographs already cited adduce, either within their own texts or in their literary references, abundant clinical evidence.

That such cases occur is beyond dispute, but we have much to learn about them. Just as in the past we have been inclined to attribute orbital cellulitis to periostitis and have paid little regard to sinus disease, so here we have probably overlooked this cause through failure to examine for it systematically.

Numerous cases also are on record where such ocular disturbances as these have been relieved or cured by drainage of the accessory sinuses. Unfortunately, reports are not wanting also of cases in which operations upon the nasal cavities have been followed by visual damage, apparently the result of thrombophlebitis, affording further proof of the close interdependence of nasal and orbital affections.

There is also a considerable mass of evidence justifying the recognition of the second division of this group (*Group III, b*), namely, cases of sinusitis without obvious external disease and without ophthalmoscopic changes, but with disturbances of vision, such as central scotoma or limitations of the field of vision, paralysis of ocular muscles, or disturbances referable to the fifth nerve.

Mendel, Jessop, Fuchs, Pannz, Delneuve, Birch-Hirschfeld,

Posey, and Hill Hastings have reported cases of central scotoma presumably due to retro-bulbar neuritis in association with disease of the posterior sinuses, and in some instances the malady was relieved by operation, while in others relief came too late but pointed the moral. Careful and precise observations on the exact limitations of the field of vision in well-authenticated cases of sinus disease are much to be desired.

In addition to paralyses of ocular muscles and neuralgias relieved by sinus treatment, another interesting association has been found in the occasional occurrence of glaucoma. De Laper-somme, Paquet, Germann, and Fish have drawn attention to some cases. Birch-Hirschfeld mentions two in his Leipzig analysis, and the writer recently had one under his own observation in a case of antral empyema.

This brings us to Group IV, which includes, at least temporarily, ocular affections in which the nasal connection has not been so clearly established. It has been asserted that affections of the cornea (Ziem and Kulmt), of the iris, of the choroid, and that opacities of the vitreous as well as of the lens, may sometimes be traced to the same source of contamination. In short, it would appear that there is no part or function of the eye whose good manners may not be corrupted by evil communications from the upper respiratory passages.

But if this be true, if only in part, it is evident that every ophthalmologist ought to have some training in rhinology or will need to assume a rhinological partner. In the first place, however, it is clear that much conjoint work will be required before specialists in either department can diagnose these cases with confidence by their associated signs and symptoms, or be able, while recognising these as concurrent, to correctly appreciate their possible independence. To-day's discussion will doubtless bring forth some expression of opinion also as to the relative position of rhinologists and oculists in the surgical treatment of these cases. In this assembly there are some surgeons who practise in both departments, and we shall look to them for valuable counsel.

Attention is drawn to Birch-Hirschfeld's paper in the January number of the *Klinische Monatsblätter für Augenheilkunde*, and to the very interesting rejoinder by Professor Axenfeld in the May number of the same journal, advocating that ophthalmic surgeons should interest themselves more in the surgical treatment of orbital and sinus affections.

In conclusion, the hope is expressed that in our awakening enthusiasm for this new field of investigation we may not be led away into too extravagant expectations of fresh conquests in diagnosis and treatment, but that this discussion may help us to recognise the limitations, as well as the advantages to be gained from the study of the relation of accessory sinus disease to diseases of the eye.

#### DISCUSSION.

Dr. STCLAIR THOMSON (London) said that the causes of thrombosis of the cavernous sinus were chiefly found in diseases of the nose and ear. The most prominent symptoms were ocular, and fell under the observation of the ophthalmic surgeon. Hitherto the approximate and most probable source of sepsis had often been overlooked. This was due to the fact that infection had been attributed to some lesion on the nose, upper lip, mouth, or throat, when the most probable focus lay in the accessory cavities of the nose. These, unfortunately, had received scant attention either at the bedside or in the *post-mortem* room. The most common cause of thrombosis of the cavernous sinus was disease of the sphenoidal sinus. Next came pyogenic infection from the ear. Infection carried by the ophthalmic vein and its branches would appear to come third in order of frequency; while infections from the pterygoid plexus more rarely occurred and the principal and characteristic symptoms affected the eye, but before they appeared the spread of infection to the sinus would depend on the focus from which it started, in the nose and its accessory sinuses, the ear, the orbit, or the throat and neck. Amongst common symptoms were those of meningitis, pyogenic temperature, rapid pulse, profuse perspiration, rigors, headache, sickness, hebetude, delirium, drowsiness, coma, convulsions, inflammations of the glands of the neck, swelling of the palate or of the cheek. The three chief ophthalmic changes were, (*a*) papillary oedema, (*b*) chemosis, and (*c*) exophthalmos. They developed from six to sixteen days after the onset of the symptoms indicating the spread of infection. They generally started on one side, and developed in the other one to six days later.

Mr. SYDNEY STEPHENSON (London) described a case of thrombosis of the cavernous sinus which came to autopsy after an illness of some twenty-three days. At the autopsy the conclusion was reached that the infection had spread from the ethmoidal and sphenoidal sinuses. The patient had been subject for several years to a thick discharge from the nostrils, and some three and a half months before the date of his death sought advice at the West London Hospital. He was then deaf and hoarse, and had nasal catarrh. The left vocal cord showed a papillomatous nodule, and secondary infiltration of the larynx was suspected to be present. A week later muco-pus was noted to be present in the right nasal middle meatus. Three weeks later pus was found in the right ear, and a fortnight afterwards the right nostril was found to be bathed in pus and blocked by polypi. After a further month, during which the patient had ceased to attend at the hospital, pains in the head and back of the neck were experienced and pyrexia noted, the condition being thought possibly due to influenza. A few days later exophthalmos and chemosis developed in both eyes, and there was a tender swelling behind the right ear. About ten days before his death, or a fortnight after the development of the

systemic symptoms, the patient showed high temperatures, extreme exophthalmos, and a tendency to drowsiness. A diagnosis of thrombosis of the cavernous sinuses was then made, and the patient died a week later, suppuration occurring meantime in one of the joints of the right hand.

Dr. ARTHUR GREEN (Norwich) said that the only case of sinus disease he had had to treat was one of left ethmoidal disease in a boy, aged eight, who four years previously developed a swelling to the nasal side of the eye while suffering from diphtheria and scarlet fever. This disappeared after lancing and did not again show itself until a year ago, when he was seen at the Norfolk and Norwich Eye Infirmary. There was a swelling at the inner end of the right upper lid above and in front of the inner canthus. The swelling was incised and a quantity of brownish tenacious fluid was evacuated, and a circular cavity about an inch in diameter was found. This contracted considerably but not completely, and it led by a track to the original operation wound to the skin.

Dr. W. S. SYME (Glasgow) said that it was surprising, considering the close relations of the parts, that the dependence of orbital disease on nasal sinuses should have been only recently brought into prominence. It was easy to see how readily inflammation might pass from the nose, up the nasal duct to the lacrimal sac and conjunctiva. Through the kindness of the Professor of Anatomy at Glasgow he had recently examined many skulls and specimens, and quite agreed with Logan Turner and Onodi, who had shown that one might fit any variation in the relation of the sphenoidal sinuses and posterior ethmoidal cells to the various sensory and motor nerves in the orbit. In one specimen he found the sphenoidal sinus almost completely surrounding the optic foramina on both sides, and the bone was as thin as tissue paper. Such a condition would greatly favour the spread of inflammation to the optic nerves.

Professor AXENFELD (Freiburg) said that in order to form a correct estimate of the part the accessory sinuses played in orbital disease, it should be recognised as a fact that acute affections of the sinuses sometimes healed spontaneously by means of evacuation of their contents through the natural openings, while the orbital diseases might persist or increase owing to the inflammatory changes taking place in a closed cavity, and thus it happened that at times the offending sinus might appear to be healthy. He had found proof of this in a case of acute sinusitis frontalis, with an abscess beneath the roof of the orbit, each containing the same organisms. A few days later he explored the sinus and found to his surprise that it had completely recovered itself and was healthy, and, consequently, required no treatment. The same might happen in other sinuses, and it was possible that a passing catarrhal affection of the peri-orbital sinuses might be more often the cause of the optic nerve disease than was usually supposed to be the case; and, as Onodi had shown, some cases of acute retro-bulbar neuritis had their origin in an inflammatory condition of the sphenoidal and posterior ethmoidal cells. Such appearances had, relatively, seldom shown themselves, but according to his observations they could not conclude that because they appeared healthy at one time therefore they had been healthy all the time; they might have recovered by the time the surgeon was able to see them, and they might escape observation during endo-nasal examination. In the cases in which the cavities were not separated by bone from the sheath of the optic nerve this was particularly likely to occur.

Dr. BRONNER (Bradford) said that every ophthalmologist saw many

cases of headache which were only partially relieved by the use of glasses. If the nerves were examined, some disease or obstruction would probably be found. One of the typical symptoms the patients with nasal disease complained of was the feeling of drowsiness after reading for a short time, and the inability to remember what they had been reading. The most dangerous cases of sphenoidal sinus disease were those in which there was not free drainage, and these cases were often difficult to diagnose. He had seen numerous cases of cavernous sinus disease due to sphenoidal sinusitis in which the latter had seemed to be normal. It was very remarkable that suppurative disease of the eyeball so rarely gave rise to cavernous sinusitis.

Professor ERNEST FREUS (Vienna) said that in some diseases of the ethmoidal and sphenoidal sinus causing orbital disturbance nothing was to be found by simple inspection of the nasal cavity; but if the orbital symptoms were sufficiently marked to indicate sinus disease they should insist on opening the sphenoidal sinus from the nasal cavity, and in some cases it would be found that it was filled with lymph or granulation tissue.

Professor AXENFELD (Freiburg) said that in his opinion the modern ophthalmologist should be capable of operating on the peri-orbital sinuses, first, because the cases usually had marked orbital symptoms with little or no evidence of sinus disease, and secondly, because every ophthalmic surgeon who operated upon orbital tumours was liable to meet with tumours involving the walls of these sinuses.

Dr. A. LOGAN TURNER (Edinburgh), in reply, said he wished to draw attention to two points: First of all, in connection with diagnosis. When an ophthalmologist sent a case to the rhinologist for examination, was the latter justified in opening one or more sinuses so as to exclude by direct observation the possibility of sinus suppuration? Secondly, as regards treatment. He had seen some cases treated by the ophthalmologist by an external incision and drainage. This generally led to septic infection of the sinus and a permanent fistula, and if the sinus was not obliterated by extensive removal of its wall, it should be drained into the nasal cavity by a permanent nasal opening, and this should only be attempted by those thoroughly acquainted with the anatomy of the nose, and such cases, he thought, had better be transferred to the rhinologist.

Dr. MACKAY, in replying to Dr. StClair Thomson, gave, as an illustration of cavernous sinus thrombosis and meningitis arising from infection along the frontal and ophthalmic veins, a case of anthrax under his observation some years ago. The primary infection was admitted at a little papule above the left eyebrow and followed by conjunctival oedema, proptosis, retinal thrombosis, and a fatal termination in a few days. He urged, again, the further study of the scotomata associated with sinus disease, and gave some details of the case of glaucoma which he had observed in association with unsuspected antral suppuration.

*Dr. Mackay's Tables, to illustrate the Relation of Disease of the Nasal Accessory Sinuses to Disease of the Eye.*

The following groups, if not very precise, may be clinically convenient:

*Group I.*—Mucocoeles of the accessory sinuses.

TABLE I.—*Characteristics of Mucocoles of the Accessory Sinuses.*

	Antural mucocoele.	Frontal mucocoele.	Ethmoidal mucocoele.	Sphenoidal mucocoele.
Age	Improbable before 5th year. Has been reported in children (age not given) as well as adults	Sinus does not develop before 7th year	May occur from earliest age, but more frequent in adolescents and young adults	Sinus develops about 2nd or 3rd year, but no case of mucocoele hitherto recorded.
Relative frequency	Rare	Fairly common, perhaps less so than ethmoidal	Probably most frequent. The symptoms and signs are very similar to frontal mucocoele. Sometimes very difficult to differentiate from frontal until operated on	—
Pain	May be felt in cheek	Rare or transient, but sense of weight or pressure is often present	Usually painless, but may be some feeling of fullness	—
Tenderness	Sometimes on firm pressure	Usually slight tenderness on pressure	Slight tenderness on pressure	—
Swelling	Not external, but bulging of nasal wall, sometimes of orbital floor	Obvious, especially below inner third of eyebrow, without inflammation of the lid, and may extend towards outer end of lid. Fluctuation or elastic fullness on palpation	When present more often restricted to region of inner canthus. Fluctuation area smaller, but often surrounded by periosteal thickening, or may give feeling of crepitation if finger pressing on lamina papyracea	—
Signs or symptoms on the part of the eyes	Occasionally upward displacement of eyeball	Displacement of eye forward, down and out. Sometimes altered refraction by compression of the globe. Sometimes diplopia from relative displacement of eye. Epiphora may be an early symptom. Sometimes asthenopia. Usually normal fundus	Greater outward displacement of eyeball may be noted. Other symptoms as in frontal cases	—
Nasal examination	Bulging of nasal wall, especially in middle meatus	Frequently negative, occasional escape of mucoid secretion, and this is sometimes induced by pressure on orbital swelling	Distension of ethmoid wall occasionally seen on anterior rhinoscopy, more frequently bulging of ethmoidal wall into middle meatus, or displacement of middle turbinate towards septum	—
Course	Chronic in all, suppuration may occur by secondary infection	—	—	—
Treatment	Opening by way of nose or canine fossa	Opening preferably by external operation and free drainage into nose	Endo-nasal operation when bulging into nose. Under other circumstances treat as frontal	—

TABLE II.—*Characteristics of Suppuration in the Accessory Sinuses.*

	Antral suppuration.	Frontal sinus suppuration.	Anterior ethmoidal suppuration.	Posterior ethmoidal and sphenoidal suppuration (commonly associated).
Commonest		Next in frequency. Often combined with ethmoidal. Probably one or both afford the most frequent source of orbital abscess.		Less common, but may occur in combination with other sinuses.
Pain	Rare. When present more often supra-orbital than in region of antrum, and this may lead to fallacious diagnosis of frontal disease.	Is supra-orbital, or sense of fullness and weight	Sometimes at root of nose	Occipital or vertical, sometimes retro-orbital, occasionally aurial and unloading. Felt sometimes with voluntary ocular movements.
Tenderness	After a variable symptom, usually absent over antrum	At floor of sinus	Sometimes about inner canthus	Cannot be directly elicited, but sometimes felt on pressing eyeball backwards.
Swelling	Of side of face if ostium becomes closed	In situation of mucocle, and varying with extent of cavity	Similar to mucocle	May have protrusion of eyeball and oedema of lid.
Peri-daeyo-cystitis	May occur	May occur	Often present, but may usually be distinguished from daeyo-cystitis by pointing above and not below the tendo oculi	
Orbital ex-amination: Orbital cellulitis or abscess	May occur with accompanying oedema of lids and conjunctiva, pyrexia (in acute cases), protrusion and restriction or immobility of eyeball, and may lead to optic neuritis or atrophy	Perforation into orbit following caries of floor may induce orbital abscess, and its signs and symptoms. It may follow tumour growth, e.g. increasing exostosis	May occur. Its exact source not always recognisable until after operation	May occur and especially likely to produce sudden or gradual disturbance of vision, such as Group III <i>a</i> or Group III <i>b</i> . If unrelieved optic atrophy may ensue, or thrombosis of the cavernous sinus and cerebral symptoms.
	Glaucoma has been recorded	Glaucoma has been recorded		
	Asthenopia not relieved by refractive correction is sometimes an indication, vertigo is a suggestive symptom			
	Conjunctivitis, keratitis, iridocyclitis, vitreous opacities, cataract, etc., have been described in association with and assigned to sinus disease			

TABLE II.—*Characteristics of Suppuration in the Accessory Sinuses—continued.*

	Antural suppuration.	Frontal sinus suppuration.	Anterior ethmoidal suppuration.	Posterior ethmoidal and sphenoidal suppuration (commonly associated).
Dental caries	Frequent, but nasal infection not infrequent apart from caries, e.g. post-influenzal			
<i>Nasal examination:</i> Nasal discharge	Frequently foetid. Often worse on stooping	Very rarely foetid	More or less constant	Often complained of in back of nose and throat, and may have bad taste. Sometimes crusting in pharynx. Pus in olfactory cleft.
Anterior rhinoscopy	Pus in middle meatus. After cleansing frequent recurrence of pus after puncturing	Pus in middle meatus. Its origin from frontal only ascertainable after exclusion of antral suppuration by proper tests, or by direct irrigation of this sinus	Nasal polypi in association with pus in middle meatus highly suggestive	
Posterior rhinoscopy	Pus lying on upper surface of inferior turbinate, especially in cases with accessory ostium	Pus may be also on upper surface of inferior turbinate	Pus may also be present in same situation	Pus in superior meatus and on roof of choana.
Transillumination	Frequent opacity of cheek. Absence of pupil glow	Of doubtful value, but X rays sometimes helpful	Valueless, but X rays may assist	Impracticable, but X rays may assist.
Further aids to diagnosis and treatment	Nasal puncture and irrigation  (The propriety of operation by external methods has always to be considered)	Catheterisation with inflation or syringing	Completed after removal of polypi by probing and catheterisation	Facilitated by removal of middle turbinate and washing out of cavities.



*Group II.*—Sinusitis, acute or chronic, accompanied by obvious external signs of orbital cellulitis, abscess formation, tumour growth, cedema of lids, or apparent dacryocystitis.

*Group III.*—Sinusitis without external signs of inflammation in the orbit or neighbouring tissues, but—

(a) With ophthalmoscopic signs, such as optic neuritis, neuroretinitis, retinal thrombosis, or phlebitis, etc.

(b) Without ophthalmoscopic signs, but with disturbances of vision, such as central scotoma or limitations of the field of vision, paralysis of ocular muscles, or disturbances referable to the fifth nerve.

*Group IV.*—To this group may be relegated cases in which the association with sinus disease has been asserted, but is more questionable, such as glaucoma, iritis, uveitis, keratitis, and opacities of the lens and vitreous, etc.

## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

*Fourteenth Annual Meeting, held at Pittsburg, Pa., May 28, 29, and 30, 1908.*

DR. EWING W. DAY, *President, in the Chair.*

(Continued from page 227.)

### THE RELATION OF PATHOLOGICAL CHANGES IN THE ACCESSORY NASAL CAVITIES TO DISEASES OF THE EYE.

INTRODUCED BY CHRISTIAN R. HOLMES, M.D., CINCINNATI.

ALTHOUGH the anatomy of the nasal accessory sinuses of man has been well known for about thirty years, their functional uses are still a subject of speculation for the physiologists. But a knowledge of the diseases of this part of the upper air tract is a matter only of the pathological yesterday.

Such cases as lately as ten years ago were deemed to be in the province of the physician, the ophthalmologist, or the dentist, and it was only when the rhinologist, with his special knowledge of the anatomy of the head and neck and his abundant clinical experience of the diseases of this region, began a systematic study of the accessory cavities for the purpose of working out a safe and

intelligent surgical anatomy, that it was possible to present to the scientific world a complete exposition of the ætiology, symptomatology, pathological anatomy, bacteriology, and operative treatment of the diseases of the accessory sinuses of the nose. Their location, shape, structure, and relation to important adjacent or surrounding structures make treatment or surgical interference often both difficult and dangerous. Their walls are frequently only of paper thickness, and in direct contact with vital structures. Under such conditions we are frequently unable to remove all necrosed bone. Take, for example, the sphenoid cavity; its walls are always thin, and at times dehiscant in the region of the optic nerve and cavernous sinus—we now know from *post-mortem* reports that the walls are often necrotic—and while a free opening may be made in the anterior wall, it is impossible with safety to remove the other necrotic walls of this sinus. Sometimes we have in any or all of these cavities septa and diverticula or irregularly projecting cells that it is almost impossible to reach unless the most radical operation is resorted to, and even then the field is not always clear, especially in the region of the sphenoid.

The manner in which infection enters these cavities in the vast majority of cases is through the natural openings when the patient is suffering from an acute or chronic infection of the Schneiderian membrane. Dr. Robert Falcone recently tested the correctness of the theory of Harke and Hajek, and proved that infected material may be forced into the sinuses during violent sneezing or blowing of the nose. These experiments were made on dogs; whether they will hold good to the same extent in man it is difficult to tell, but we do know that during the act of vomiting some of the contents of the stomach have been forced into the accessory sinuses. Infection, no doubt, sometimes extends from the nares to the sinuses through the blood and lymph-vessels of the contiguously inflamed tissue, and swelling of the mucous membrane in the nose may occlude the natural openings. Carious teeth play a somewhat important rôle in the development of antral suppuration. While the dentists and many rhinologists formerly attributed nearly all cases of antral infection to dental disease, it is now generally accepted that from 5 to 10 per cent. is more nearly correct.

It must not be forgotten that the cavities having no connection with the teeth are just as liable, if not more so, to be infected, than is the antrum of Highmore.

Harke, in thirty-seven *post-mortem* examinations of children dying of diphtheria whooping-cough, scarlet fever, measles and

chickenpox, in every case found suppuration in one or more of the accessory cavities, the maxillary antrum being the most frequently affected. While children are frequently attacked, fewer cases come to operation than among adults, because, usually, their recuperative powers are greater than those of adults. The most frequent cause is undoubtedly influenza.

Dr. Darling, Pathologist to the Ancon Hospital, Isthmus of Panama, conducted an investigation to determine the relation of inflammations of the accessory nasal sinuses to pneumococcus infections. He found that 92 per cent. of all pneumococcus infections coming to autopsy showed in a very marked degree more or less typical pneumococcus inflammation of one or more of the nasal accessory sinuses. The inflammation was generally intense. Pneumococci were always present, and in numbers dependent on the duration of the process. A point of great importance was that the age of the sinus infection had been appreciably greater than that of the lung. Ninety-one per cent. of lobar pneumonia cases showed a sinusitis. All cases of acute pneumococcus meningitis presented an inflammation of one or more of the sinuses, and in every one the middle ears and mastoid cells were normal. In the pneumococcus septicaemia group 80 per cent. were found to be associated with a sinusitis. In a case of acute pericarditis all the sinuses were involved. Darling believes "that the portal entry of the pneumococcus is in most instances an accessory nasal sinus, the mucous membrane of which is probably fitted for the reception of the pneumococcus by an antecedent influenza or rhinitis."

Erysipelas has been regarded as a cause, but it can now be positively asserted that it is *secondary to sinus disease*. Tuberculosis may, by ulceration and necrosis, extend from the nares into any of the sinuses, but he wondered if they were as frequent as some would have us suppose. On the other hand, syphilis is frequent, but, as a rule, it yields readily to vigorous internal treatment. Malignant tumours may invade or develop within the cavities. If the disease is at all extensive the prognosis is always very grave. It is remarkable to what an extent these growths may cause displacement of the contents of the orbit without interfering with vision, or even causing diplopia. This is, of course, explained by the absence of inflammation, and the slowness of the growth which enables the parts to adjust themselves to existing conditions. He had come to the conclusion not to use the knife hereafter on malignant tumours in this region—it was so hopeless. Only one method gave any hope at all, namely, the cataphoric

treatment of malignant growths by the Belton-Massey method. Either use his hollow gold electrodes filled with metallic mercury, or the zinc electrode, amalgamated at the moment of using with sulphuric acid and mercury, is the proper method. By using from 400 to 1000 milli-ampères of current under a pressure of from 50 to 75 volts most remarkable results can be obtained. Massey's explanation of the action of this cataphoric sterilisation is as follows: "By the electrical conversion of metallic mercury injected into the growth into a soluble oxychloride, which is then diffused in all directions through the growth, the protoplasm of the cells, germs and all, is converted into an albuminate of mercury, rendering the dead mass thus formed aseptic and odourless until it drops off, leaving a clean wound to be healed by granulations. But the method does not stop its usefulness at the edges of the slough thus formed. This area of destruction, which should be coterminous with the supposed edges of the growth, is surrounded by a sterilised zone of varying extent, within which the diminishing density of the radiated chemical leads to the death of the lowly organised cancer-cells only, the normal tissues being merely stimulated to a greater physiological resistance."

He had used it successfully in a case of sarcoma involving the tonsil and base of the tongue, and again in a case of sarcoma of the hard and soft palate the size of half a small orange, under general anæsthetic of about one hour's duration, leaving the whole tumour a greyish-white, shrunken, coagulated mass. This method is, of course, not applicable in a cavity enclosed by bone until the growth is surgically exposed.

Non-malignant growths, such as fibromas, generally originate in the fibrous tissues beneath the mucous membranes of the nasopharynx, and invade the sinuses or cranial cavity secondarily after the bony walls have been absorbed by pressure. They frequently set up a purulent sinusitis, a condition that adds to the danger of their removal.

Twenty years ago dacryocystitis was a very common affection, and many of us can remember seeing in clinic and private offices patients sitting about with silver probes projecting from their nasal ducts. The oculists of those days were treating the symptoms instead of the disease, and continued to do so until the rhinologists discovered that tear-sac affections are nearly always due to an inflammation having its primary seat in the nose. Treatment at the lower end of the canal, instead of probing from above, will, as a rule, bring quick relief in acute cases. An undiscovered puru-

lent inflammation of the antrum may extend to the tear-sac, causing purulent dacryocystitis, for which the patient seeks the advice of an oculist. Cysts may spring from any cavity. The frontal sinus is, perhaps, most frequently affected. The most typical case he had ever encountered occurred in a woman about fifty-five years of age. The swelling appeared long before she sought advice. The globe was enormously displaced downwards and outwards; movements of the eye were almost entirely abolished. The cornea was exposed, requiring a pad and bandage over the lids for its protection, yet vision was practically normal and ophthalmoscopic examination negative, except for a slight dilatation of the veins. Operation revealed that the cyst had eroded all the anterior portion of the os planum and the anterior ethmoid cells, the floor of the frontal and most of the dividing septum between the two frontal sinuses. The contents were of a greenish-brown colour, and sticky, oily consistency. Analysis and bacteriological examination showed it to be mucous and free from organisms. These cysts are always of slow development, are firm, elastic or semi-fluctuating on pressure at the centre, but have a firm bony or ring-like feeling at the base. Epiphora, and in some cases diplopia, are the only symptoms in this class of cases. The nasal examination is generally negative.

Osteomata are rare; they may develop in any of the cavities, or within the nose. They are usually pedunculated and of ivory hardness. They may extend into the orbit, causing displacement of the globe with epiphora.

He divided the purely inflammatory conditions into two groups—acute and chronic—bearing in mind that the chronic varieties are liable to acute exacerbations, the pathogenic organisms becoming *for the time being very virulent*. During such periods of *increased virulence* it behoved to think twice before operating lest the case developed erysipelas (auto-infection) or the infection led to venous thrombosis, meningitis, or brain abscess.

One of the most serious but infrequent results of a sinus infection is an infective thrombosis of the cavernous sinus with involvement of the contents of the orbit. One can readily see how infection or thrombosis may extend from the ethmoid vein into the ophthalmic vein and cavernous sinus, or by direct extension through the thin or dehiscant walls of the sphenoid cavity, just as we can trace the disease from the mastoid cells to the thrombosed lateral sinus.

An important point that he emphasised was this—in purulent

frontal, ethmoid or sphenoid cases (*i. e.* the cavities close to the brain) we should avoid making any minor intra-nasal operation shortly before the radical operation is undertaken, because even a slight operative attack in an infected nose may cause an increased virulence of bacteria. Killian says, "the most difficult thing is to estimate the virulence of the bacteria." We should make it a rule, where possible, to operate as the general surgeons do for appendicitis, *i. e.* after the acute symptoms have subsided, or, if it should become absolutely necessary, make only a sufficiently large opening to drain the cavity *for the time being*. We should, of course, always be specially careful when in the region of the cribriform plate, or the exposed dura, where the inner table is necrosed. Here we often find ragged, unhealthy-looking adhesions formed around the opening. This "phagocytic wall," Nature's great barrier against meningitis, *should not be disturbed*.

There are many cases on record where partial or total blindness of one or both eyes with violent pains has been promptly relieved by recognising the presence of an empyema in one or more of the cavities and instituting the proper treatment. In this class of cases it is nearly always the sphenoidal cavity that is at fault, because of its intimate relation to the nerves, arteries, veins and muscles of the eye. The eye seldom causes any trouble with the nose and sinuses, but the latter very often involves the eye and orbit. It is important, therefore, that all ophthalmologists should know more about this subject in order to be able to recognise cause and effect.

In this class of cases we find as leading symptoms, pain, steady or intermittent, contraction of the field of vision, general asthenopic symptoms, hazy vision, tenderness of ocular muscles, inflammation of the conjunctiva and uveal tract, optic neuritis and atrophy; but this part of the subject I shall leave to Dr. Posey, who opens the discussion on this paper.

Dr. WM. C. POSEY, of Philadelphia, said that the proper person to treat diseases of the sinuses was one who combined both rhinology and ophthalmology in his practice. Rhinologists relied upon their ophthalmological colleagues for the interpretation of ocular symptoms arising in the course of an inflammation in their territory, while ophthalmologists waited for the report of the rhinologist before arriving at a diagnosis in almost every case of orbital involvement. While this course might have its advantages it also possessed many disadvantages, for a zone of neutral or disputed territory was left in which the rhinological and ocular symptoms failed to dovetail

into one another, and the diagnosis of the conditions evoking the symptoms was obscured. In earlier years all cases of sinusitis with orbital symptoms fell to the ophthalmologist. Rhinology had not been developed, and practically nothing was known of the accessory cavities; but recently rhinologists had absorbed the treatment of these cases, and, among other procedures, had not hesitated to include the orbit in their field of operation when they were unable to procure satisfactory drainage by intra-nasal methods. Beyond the recognition of the fact that nearly all abscesses of the orbit were secondary to sinus infection, until very recently ophthalmologists were ignorant of many of the symptoms which sinusitis evoked in the eye. The rhinologist should be aware that a beginning sinusitis might occasion a stasis in the circulation of the optic nerve, which was readily discovered by the ophthalmoscope and by subjective tests; that paresis of one or more of the ocular muscles might result from an involvement of the nerve or nerves supplying them, as they pass along the outer wall of the sphenoidal sinus, and that impairment of their function might result from direct involvement of the ocular muscles. The significance of so-called pre-lacrimal tumours and abscesses should be appreciated, and the swelling properly attributed to an involvement of the lacrimo-ethmoidal cells and not to a distension of the sac. He thought sinusitis was a not infrequent cause of asthenopia or symptoms of eye-strain. Blind spots and motes before the eyes were not infrequently caused by a derangement of the optic nerve, and troublesome and persistent conjunctival symptoms are often dependent wholly upon sinus disease. It had occurred to him that an inflammation of the sheath of the nerve, resulting from a sinusitis, might result in a closure of the lymph space which surrounds the nerve, and so interfere with the exit of lymph from the eye that chronic glaucoma might arise. This was, of course, purely hypothetical, for so far as he knew no pathological study had ever been made of the sinuses or of the optic nerve adjoining the sinuses in any case of chronic glaucoma, but the association of chronic disease of the sinuses in several cases of glaucoma which he had observed had led him to think that there might be a casual connection between the two. An ophthalmological examination should be made in all cases of sinusitis. In latent and obscure cases the detection of a stasis in the circulation of an optic nerve was often the first positive sign upon which to establish a diagnosis.

Dr. LEWIS A. COFFIN, of New York City, emphasised the importance of urging upon pathologists that in all *post-mortems*

the sinuses should be thoroughly examined. As to the frequency with which pneumonia, meningitis, etc., occur through the sinuses, more data was needed before this could be definitely determined. In the cases which he had observed of malignant and other tumours in the sinuses the optic nerve was much affected. He cited the case of a man sent to him on account of extensive dacryocystitis. Examination revealed osteo-chondroma involving both antra and completely filling the nasal fossæ. Absolute atrophy of the nerve of the right eye was found, and the left eye showed all the premonitory symptoms of atrophy. Dr. Holmes's point about being careful in the region of the cribriform plate was well taken. If the condition demanded work in the immediate neighbourhood of the cribriform plate, which was not so in ordinary ethmoiditis, a more open field of operation should be secured. He condemned the practice of cutting into tumours in these regions for the purpose of examination except immediately preceding radical procedure. Most of the cases were hospital cases, and while they could be examined before operation, it was difficult to hold them afterwards sufficiently long to know the end results of the eye condition.

Dr. DUNBAR ROY, of Atlanta, Ga., considered the relationship in two divisions: (1) Diseases of the eye which are reflex from an abnormal or diseased condition of the nasal cavities; (2) diseases which show objective changes in the eye and are dependent upon direct extension of disease from the nasal cavities. In the first category he placed neuralgic and asthenopic symptoms of the eyes dependent upon such conditions in the nose as pressure from enlarged turbinates, spurs upon the septum, adventitious growths, and severe inflammations. While admitting that such conditions of the nose may produce neuralgia and asthenopic symptoms in the eye, he had not found them a frequent cause. At the meeting of the Ophthalmological Society in 1900, Dr. Ewing and Dr. Sluder, of St. Louis, had read a joint paper on "Nasal Conditions in Frontal Headaches." Dr. Ewing described as asthenopia eye symptoms characterised by increasing pain in the eyes after prolonged use, accompanied by tenderness at the nasal and under parts of the brow, and which could not be relieved by glasses when a decided error of refraction existed. Dr. Sluder had examined these cases and concluded that the pain was due to a congestion of the membrane of the naso-frontal and a pressure of the uncinate process against the bulla of the ethmoid, thus causing a closure of the infundibulum. This closure produced a change in the air-



pressure within the sinuses, and this inequality caused the symptoms of neuralgia and fatigue on using the eyes. Shrinkage of the membrane in milder cases, and resection of the middle turbinate in severer cases, was advocated for the purpose of giving a free opening of the infundibulum. Since the presentation of this paper Dr. Roy had looked for similar cases, but with the exception of cases in which there was marked objective appearance of a polypoid condition of the middle turbinate and ethmoidal region, or marked hypertrophy with great pressure, he had been unable to find any such among the last 2000 cases of refraction. He was inclined to believe the condition rare. He had noted the symptom, to be sure, but always as a condition referable to the nose, where distinct lesions could be found. In such reflex neuroses he was convinced that a psychical element played a prominent part, and that the relief sometimes experienced by a cantery operation or the removal of a spur might be placed in the realm of suggestive therapeutics. However, real lesions of the nose and of the sinuses did occasion various subjective symptoms in the eyes. Frontal sinusitis, whether mucoid or muco-purulent, would occasion severe pains in the eyes. More painful to the eye, and especially on the movements of the eye, was an abscess in the sphenoidal and posterior ethmoidal sinuses. During the past winter he had treated ten such cases where the pain was so severe that anodynes had to be used for two or three days. All recovered under cocaine and adrenalin shrinkage, together with warm salt-water douches. Ziern had written a great deal upon this subject, attaching great importance to the reflex and direct action of diseases of the nose and accessory cavities to various conditions of the eye, and claiming that he had found diseases of the uveal tract, cyclitis, and even glaucoma to be dependent upon an accessory sinus infection. Ziern had claimed that in empyema of the maxillary sinus he had frequently found contraction of the field of vision. In severe cases this might occur, but Dr. Roy had been unable to confirm these observations. In the second category mentioned there was a direct extension of the pathological process to the orbit or its contents from the nose or accessory cavities. Professor Axenfeld had discussed orbital abscesses dependent upon their extension from and communication with the ethmoidal and frontal sinuses. Dr. Roy had reported two such cases at the meeting of the British Medical Association. In the first case the orbital abscess was taken for an orbital sarcoma because of the history and age of the patient and the existence of complete blindness. Operation

revealed an abscess coming from the ethmoid cells. Vision was almost entirely restored. In the second case, a young man presented himself with proptosis and chemosis of the conjunctiva so marked that it protruded between the lids like a balloon. On examining the nose the middle turbinate on the affected side was found to be soft, and pus was coming from the ethmoid cells. The turbinate was removed and the cells curetted and drained, with the result that in three weeks the eye was perfectly normal. When the thinness of the bone separating the orbit from the ethmoidal cells was considered it was surprising that the eye is not more frequently involved by direct extension. Nelson Black had reported a case of retrobulbar neuritis caused by a frontal sinusitis which entirely disappeared upon relief of the frontal sinus.

Dr. THOMAS J. HARRIS, of New York City, related a case which illustrated the dangers, so far as the eye is concerned, involved in pathological conditions in the accessory cavities. The patient presented himself at the hospital two years ago and a diagnosis was made of involvement of the accessory sinuses. Intra-nasal operations were performed, a large number of polypi removed from the anterior ethmoidal cells. The patient left the hospital before the work was completed, however, and gave up treatment. He reappeared a year later in the eye department with the report that while sitting at his table in good health he had suddenly become blind in the left eye. Ophthalmoscopic examination was negative, and he was operated upon and extensive disease of the sphenoidal sinus was found. So far as the nose was concerned the operation was successful, but so far as the eye was concerned it was of no avail. There was absolutely no fistula or breaking down of the wall of the orbit, and why the infection proceeded so rapidly was not known.

Dr. WILLIAM L. BALLENGER, of Chicago, said that his experience did not agree with that of Dr. Roy, who had not found many refraction cases which were relieved by intra-nasal operation. He had had many cases referred to him by oculists, and he had found an undoubted relationship between the nasal conditions and the asthenopia present. After correction of the condition in the nose, whatever it happened to be, and carrying out the suction treatment according to Bier's principles, he had enabled the oculist to give perfect satisfaction with the use of glasses. A number of illustrative cases were cited, perhaps the most interesting of which was that of a man, aged forty, who had double ethmoiditis and sphenoiditis. The ethmoidal cells were filled with polypi, and

quite a large polypus was removed from the sphenoid. He operated upon the right side first, as this seemed to be objectively the worse. Vision rapidly increased until the patient could count fingers at twenty feet. Five days later he operated upon the other side, with the result that the patient became comatose, with involuntary action of the bowels. The light packing was removed from the nose, hot irrigation instituted, the patient rapidly regained consciousness, and is now at work with a vision of  $\frac{2}{20}$  with glasses. In this case the vision was  $\frac{2}{20}$  with glasses before the operation, so that it might be said that it was just the same after operation as before the condition arose; but it must be borne in mind that this patient had been blind for only ten days before he was put under treatment, whereas in other cases cited blindness had existed for two months, so that the atrophy was greater. In one case, under observation for two years previous to operation, the work on the nose did no good whatever. This emphasised Dr. Harris's contention that intra-nasal treatment should be instituted very early in the course of the disease.

Dr. STEPHEN H. LUTZ, of Brooklyn, cited the one case of a woman, aged twenty-eight, who had been blind since she was sixteen. She had consulted the leading ophthalmologists in this country and abroad and had abandoned hope of recovering her vision. She had optic neuritis of the left eye. When she came under his observation three years ago she had very noticeable ozæma. He found a large hole in the sphenoid on the left side, and the probe revealed the absence of the external lateral wall and roof of the sphenoidal cavity. Here was undoubtedly to be found the explanation of the trouble with the eye.

Professor JANSEN said in cases of malignant neoplasms he preferred the radical operation, where it was possible to remove all of the diseased tissue. He had seen eighteen cases of neoplasms with disease of the antrum and ethmoids, and only three cases with disease of the frontal sinus. Of the former he had seen positive cure in four cases, including endothelioma, sarcoma and carcinoma. There remain, unfortunately, a large number of inoperable cases. He would try Dr. Holmes's method in the future. It was astonishing how infrequently meningitis occurs as a result of suppurative accessory sinus disease. In these cases there were severe headaches. Among the indications for operation the fear of cerebral complications played a very unimportant rôle. Furthermore, it was astonishing how seldom infection after a radical operation was the cause of death, provided there had been no injury to the dura.

He avoided exposing the dura, especially at great depths. He had the opportunity of seeing many eye diseases complicated by suppurative accessory sinus affections. In several cases of amaurosis the sight returned rapidly after intra- or extra-nasal operations. In some cases, however, spontaneous improvement had occurred.

Dr. JOHN A. THOMPSON, of Cincinnati, reported two cases of paralysis of the third nerve following ethmoiditis, in each of which operation upon the ethmoid, and sphenoid in one case, resulted in perfect cure and complete restoration of the vision. For three years he had been watching a case with progressive suppuration, first in the ethmoid, then in the antrum, then in the frontal. The ethmoid was completely removed. With the onset of the symptoms in the frontal there was a sudden failure of accommodation in the eye on the affected right side. The severe headaches were not relieved by drainage of the frontal sinus until this failure of accommodation was recognised and a change made in the glasses. The glasses had to be doubled in refractive strength, first in the right, and then in the left eye.

Dr. JOSEPH A. WHITE, of Richmond, Va., referred to the connection between the nose and the eye through the lacrimal sac, which, through its connection with the nasal duct, was really another accessory sinus. He had had a great many experiences in recent years which had led him to look upon the nose as a source of danger even when there was no trouble with the lacrimal sac. In two instances the loss of the eye had followed cataract extraction despite every possible precaution. In each case subsequent examination showed the nose to be filled with pneumococci. With no apparent trouble in the nose, no secretion, no disease of the lacrimal sac, the eye was lost because of infection, which evidently travelled up through the nasal duct. He had been amazed to find in how many cases the conjunctival secretion is infected where there is no apparent disease of the nose.

Dr. JOSEPH BECK, of Chicago, called attention to the fact that *post-mortem* examinations of the accessory sinuses are usually made by general pathologists who have no special knowledge concerning this region. It had been established by Wingrave and others that the finding of fluid *post-mortem* was not necessarily an evidence of disease of the accessory sinuses, but a *post-mortem* change. He had been making his own *post-mortem* examinations of the sinuses, and had found it far more satisfactory.

NEW YORK ACADEMY OF MEDICINE—SECTION  
OF LARYNGOLOGY AND RHINOLOGY.

*Meeting, November 25, 1908.*

DR. W. FREUDENTHAL *in the Chair.*

A STUDY OF THE ANATOMIC RELATIONS OF THE OPTIC NERVE TO  
THE ACCESSORY SINUSES OF THE NOSE.

BY HANAU W. LOEB, M.D.

(1) The sphenoidal sinuses vary as follows: antero-posterior diameter 2 to 42 mm., supero-inferior 4 to 36 mm., lateral 2 to 35 mm., averaging, respectively, 21.5, 22.8, 18.4.

(2) The opening of the sphenoid into the nose, in the great majority of cases, is about midway between the floor and the roof of the sinus. In some instances it is much closer to the roof.

(3) The diameters of the ethmoid labyrinth and its component parts, the anterior and posterior ethmoid cells, vary as follows: labyrinth, antero-posterior 22 to 54 mm., supero-inferior 17 to 59 mm., lateral 9 to 28 mm.; anterior ethmoid cells, antero-posterior 9 to 40 mm., supero-inferior 7 to 57 mm., lateral 7 to 29 mm.; posterior ethmoid cells, antero-posterior 13 to 32 mm., supero-inferior 6 to 38 mm., lateral 8 to 28 mm.

(4) The diameters of the frontal sinuses vary as follows: antero-posterior 9 to 33 mm., supero-inferior 14 to 51 mm., lateral 7 to 42 mm.

(5) The diameters of the maxillary sinuses vary as follows: antero-posterior 17 to 42 mm., superior inferior 17 to 47 mm., lateral 7 to 33 mm.

(6) The optic chiasm is usually in relation with one or both sphenoid sinuses, in no instance, in these skulls, with the ethmoid. In more than half of the skulls it lay posterior to the sphenoid cavity.

(7) The optic nerve may be divided into a sinus portion and a free portion, of which the former is usually the larger, as shown by the variation, as follows:

Optic nerve 34 to 55 mm., sinus portion 17 to 32 mm., free portion 12 to 28 mm. As far as could be ascertained there is nothing in the extent and shape of the sinuses to account for the variation in the length of the nerves.

(8) In five instances (one third) one sphenoid was in relation with both optic nerves, the other sphenoid not participating; in two the other sphenoid participated in the relation, and in one there was no relation between either sphenoid and one of the optic nerves.

(9) There is a considerable variation in the distance between the optic nerve and the level of the lower margin of the nasal opening of the sphenoid, from 2 mm. above to 14 mm. below. In four instances the opening was at the level of, or above, the optic nerve.

(10) As a rule the last posterior ethmoidal cell (sometimes there are two) has a very slight relation with the optic nerve at the postero-external angle just at the roof, and from this point the nerve passes externally to the bulbous, gradually increasing the distance which separates it from the labyrinth. In one instance an anterior ethmoid replaced the posterior ethmoid cell and assumed the usual relation of the last posterior ethmoid cell. When the last posterior ethmoid cell replaces the sphenoid the optic nerve runs along the external wall of the ethmoid.

(11) The frontal is not in close relation with the optic nerve, except when it extends posteriorly in the region of the ethmoid cells. It is commonly in relation with the bulbous, but sometimes it is far removed from it.

(12) The roof of the maxillary sinus, forming the inferior wall of the orbit, is below the bulbous, and does not reach a distance nearer than 7 mm. from the optic nerve.

*Clinical Deductions.*—(1) Optic nerve involvement without peri-orbital abscess, although heretofore thought to be an infrequent sequela, is common enough to merit consideration in sinus affections.

(2) There have probably been many unreported cases.

(3) In all likelihood many minor symptoms resulting from transitory involvement have been overlooked.

(4) Whether the infection be lymphogenous or hæmatogenous, or by contact, the smaller the distance from the infecting focus the greater will be the chance of the involvement of the nerve.

(5) It, therefore, is uncommon for frontal or maxillary sinusitis to be accompanied by optic nerve disease without peri-orbital involvement. However, from their relation to the bulbous, disease by extension through it is not to be overlooked.

(6) Sphenoidal sinusitis would naturally be called to account as the prolific cause of the infection, but the sphenoidal is less

commonly affected than the other sinuses, and, except in closed empyema, the pus is evacuated in a large measure through its nasal opening. Stagnant and decomposing pus is more or less common on the floor, in sphenoidal empyema in that part farthest removed from the optic nerve; but this factor becomes more potent where the orifice is at the level or above the optic nerve, as shown in the four skulls, and the likelihood of trouble is greatly increased by the immediate propinquity of the stagnant and decomposing pus, which, in these cases, is separated from the nerve only by a thin lamina of bone and the nerve-sheath.

The six skulls out of fifteen, shown and described in this paper, in which one sphenoid is in relation with both optic nerves, afford sufficient explanation for contra-lateral optic neuritis when caused by sinus disease.

(7) The anterior ethmoidal cells, which are so commonly affected with suppurative inflammation, are so far from the nerve that they are not likely to influence the optic nerve except through the effect on the peri-orbita adjoining. However, where an anterior ethmoidal cell is extensive enough to come into relation with the nerve by replacing a posterior ethmoidal cell trouble is more likely to occur.

(8) The posterior ethmoidal cells, also frequently affected, have very little influence on the optic nerve. But when the cell replaces the sphenoidal and the optic nerve passes along the external wall, then the posterior ethmoid becomes the most potent factor of all, for the nerve is closer to the mass of pus and for a greater distance than under any other circumstances, even though the nasal opening may be in the dependent portion of one part of the cell.

(9) It, therefore, becomes necessary to study more carefully the cases in which the sphenoid orifice is near the optic nerve and in which the sphenoid is replaced by a surmounting ethmoid cell.

Dr. ROSS HALL SKILLERN (Philadelphia) said that if the practical interest in this subject was as great as the scientific, blindness or severe eye affections from disease of the posterior ethmoidal cells or sphenoidal sinus would be a thing of the past. Owing, however, to the surgical inaccessibility of the pituitary region and the almost irreparable damage done the moment the disease progressed beyond the borders of the accessory air cavities of the nose, the future seemed to offer little in the way of treatment once this region had become infected. As far as the practical interest is concerned it was of the greatest importance to know that this nerve may lie in direct communication with the sinus. This ex-

plained why a certain virulent empyema of the sphenoid sinus will run its course with only nasal and post-nasal symptoms, while another of less virulent type suddenly assumes grave symptoms after a mild course of weeks or months. The thickness of the bony walls between the sinus and the brain is responsible for these vagaries. In one case the drainage is good and the walls thick enough to withstand the attacks of the disease. In another, perhaps, a sudden cold is acquired, the ostium of the sphenoid becomes occluded, resulting in stagnation of secretion, infiltration of leucocytes and pathogenic germs through the diploë, with subsequent meningitis, brain abscess, and death. As far as the eye symptoms as a complication of sphenoidal disease are concerned, the question is whether these symptoms are due directly or indirectly to the sinus disease—in other words, whether they are not due to some other condition dependent on the sinus disease, such as thrombosis of the cavernous sinus, in which the ophthalmic and retinal veins practically always participate. Of course where the optic nerve or commissure lies in direct apposition to the affected sinus one would expect its involvement. On the other hand, derangement of sight may occur in connection with empyema of those sinuses and be totally independent of it. After all, the main point is the early recognition of the condition. Congestion of the retinal veins is suspicious of involvement of the ophthalmic vein, and is of the highest importance. Œdema of the infra-orbital region points to congestion of the ophthalmic and ethmoidal veins, which should indicate disturbances in the sinus cavernosus. Many fatal cases could be saved if this condition is recognised and a radical operation on the sphenoid instituted.

Dr. WARD A. HOLDEN said a search for an optic nerve affection of sphenoidal origin led to his finding two cases of blindness of this kind. In one operative measures were refused, while in the other a most thorough opening up of the sinuses caused no improvement in vision. The anatomical studies of Onodi, and his subsequent collection of cases showing the relations between the ethmoid cells and the optic nerve, taught that many obscure cases of retro-bulbar neuritis might be explained and cured. A flood of reports of cases treated successfully had since come from all parts of the world. Retro-bulbar optic neuritis was the name given to an affection of the optic nerve behind the eyeball, characterised by a loss of vision in the centre of the field of vision (central scotoma), while the peripheral limits of the field were at first normal. The defect in the centre of the field enlarged until the entire field was involved, and



the eye became blind. The optic disc was in some cases edematous and swollen. Acute retro-bulbar neuritis followed grippe, simple coryzas, etc. In acute cases ethmoidal disease was looked for always but was not always obvious. There were many records of cases in which nothing abnormal was found, yet removal of the middle turbinate restored lost vision.

Dr. COFFIX was not sure that he was fully willing to accept all of Dr. Loeb's clinical deductions, especially the statement that the infection is directly at the distance. Dr. Loeb did not refer to the possible bulging of the sinus and consequent pressure upon the nerve, but rather to an infection. It must be either through the lymph or venous channels, and that part of the sinus nearest to the nerve might be as regards the lymph or venous channels the farthest away. The frequent association of exophthalmos and ptosis with sinus disease in which no necrosis of the orbital walls had occurred led him to feel that the trouble about the eye was brought about most frequently by some blocking of the venous channels. It had occurred to him that there might be a phlebitis in the ophthalmic veins, of a greater or less severity, not developing an actual thrombosis. All the clinical symptoms were present in cases of cavernous thrombosis. He had lately been in the habit of sending suspected sinus cases to the eye department for examination, and the following was a typical report. The patient, a young man, about eighteen or nineteen years of age, upon whom a diagnosis of ethmoiditis and sphenoiditis had been made, stated that he had no trouble with his eyes. "Right eye—vision 20; optic disc engorged, especially the descending veins; oedema of the left disc less marked; lower veins engorged." In a case he had seen there was a swelling about the size of a hazelnut on the forehead over the frontal sinus. Through a skin incision he was able to pass a silver probe directly through necrotic bone into the frontal sinus. The case showed the initial signs of optic atrophy.

Dr. PERCY FRIDENBERG observed that a broad division of the cases had been made into three groups. First, those in which distension of a sinus with inflammatory or other exudate encroached on the space of the orbit, causing exophthalmos, limitation of motility and interference with sight. In these conditions the accessory disease was apparent. In a second type the inflammation of the sinus extended to the soft tissues of the orbit by lymph or blood channels and caused an orbital cellulitis or abscess, or septic phlebitis of the orbital veins, with involvement of the optic nerve either by extension of the inflammatory process or by com-

pression of the nerve by the exudate. In these cases the accessory sinus disease was detected without much difficulty. In the third class of cases there were no orbital symptoms and no inflammatory reaction at all. The symptoms were subjective—a loss of a small part of the central visual field, the central scotoma. This defect was due to loss of function in the macular fibres of the nerve which supplied the point of fixation and area of clearest vision, and was explained by the course of these fibres, from the chiasm in the lower nasal quadrant of the trunk of the nerve. Dr. Loeb's specimens showed how distension or inflammation of the sphenoidal or posterior ethmoidal cells would be nearest this aspect of the nerve. The nerve head in such cases might show very little change. Functional examination would show up the scotoma, which was often unsuspected. Vision in the rest of the field might be good. No doubt there were other obscure affections of the optic nerve dependent on accessory sinus disease. There were cases with bi-temporal hemianopsia indicating pressure on the anterior commissure of the optic nerve at the chiasm. The diagnosis of a tumour of the pituitary body was sometimes made, even when there were no symptoms of involvement of the hypophysis, such as acromegaly and nervous symptoms. Such cases might be explained by distension of the sphenoidal sinus directly backward. In all the groups mentioned ocular symptoms were striking, so that the patients were more apt to consult the ophthalmologist than the rhinologist. The rhinologist could aid by making a diagnosis of accessory sinus disease, often a very difficult matter, and one which could not be settled by a simple rhinoscopic examination. As to treatment, some cases even of marked blindness had been relieved and cured by simple re-establishment of nasal drainage and local treatment without any operation whatever. In others, advanced disease of the mucosa, granulations, pus accumulation, dead bone or polypi had to be removed by external operation, which demonstrated how futile any attempt at endo-nasal probing or application would have been. The orbital route enabled us to determine the extent of the diseased area and to remove it thoroughly.

Dr. W. W. CARTER related a case of glaucoma of seven years' duration associated with pan-sinusitis of fourteen years' standing.

Dr. CHAPPELL said that he had seen only one case of sphenoidal disease that had any effect on the optic nerve. The case was a woman with nasal discharge, who began to lose her sight from optic neuritis accompanied by a great deal of frontal and occipital headache. She lost the sight of her left eye, and the occipital

headaches continued. He opened the sphenoidal sinus and got twelve to fifteen drops of foul-smelling pus and much granulation tissue. Her headaches disappeared in a week, and in a month her eyesight improved, and she recovered the eyesight in the right eye.

Dr. FREUDENTHAL asked how the skiagraphic picture of the sphenoidal sinus was taken.

Dr. SKILLERN said that Dr. Pfahler, of Philadelphia, took it from above the occiput so that it would come down through the nares, and that he would get the large nasal opening as the point of least resistance. In every other direction one encountered either bone tissue or other more or less dense structures, but taking it from the vertex proved very satisfactory. In a number of cases one could see very distinctly a dark shadow where sphenoidal trouble had already been diagnosed.

Dr. LOEB, in closing the discussion, said that from his anatomical studies he had made a few deductions based on the anatomical relations and the fact that whether the infection was lymphogenous or hæmatogenous and by contact, or both, the nearer the focus the greater the likelihood of infection. The relation between the nasal opening of the sphenoid cavity and the optic nerve, as demonstrated, signified that when the sphenoid contained pus there was more danger in some cases than others. In those cases where the opening was high up and near the level of the optic nerve only a thin layer of bone lay between the stagnant pus and the optic nerve. Under such circumstances a skiagraph of the sphenoid with a probe introduced into its nasal orifice would point out the danger. The skiagraphs were of great service, and it would doubtless be possible to determine the distance intervening between the sphenoid orifice and the optic nerve *intra vitam*. Considering that ordinarily the relation between the ethmoid and the optic nerve was so slight and that drainage through the nasal orifice was so likely to occur, it was easy to understand how infection from the ethmoid to the optic nerve was uncommon in spite of the frequency of ethmoidal inflammation. But where the ethmoid replaced the sphenoid the picture was changed, for then the nerve ran along the external wall and the relation was such that it was closer to the mass of pus than under other circumstances, and the possibility of infection was therefore greater.

## Abstracts.

### PHARYNX.

**Savage, W. G.**—*The Scientific Control of Diphtheria*; paper read at meeting of the Society of Medical Officers of Health. "Lancet," January 23, 1909, p. 242.

The speaker insisted upon the examination of "contacts" of a case of diphtheria and the isolation of "carriers," even if they were not ill. In the subsequent discussion some opposition was expressed to this extreme, though logical, proposal.

Dan McKenzie.

**Jacques and Lucien (Nancy).**—*Peritonsillar Phlegmon fatal from Thrombo-phlebitis of the Cavernous Sinus*. "Annales des Maladies de l'Oreille, du Larynx, du Nez, et du Pharynx," December, 1908.

On January 20 a man, aged forty, a confirmed alcoholic, was suddenly attacked with pain in the throat and dysphagia. Examination of the buccal cavity revealed a red œdematous swelling on the right side of the throat, having its maximum intensity at the point of junction of the velum with the upper pole of the tonsil. Special resistance was obvious on palpation, but no fluctuation. A peritonsillar phlegmon was diagnosed and punctured with the galvano-cautery, but no pus was present. The next day fœtid purulent matter issued from the puncture, the parts were as swollen as before, and tumefaction appeared just behind the angle of the mandible of the corresponding side. The previous opening was enlarged but little relief followed.

On January 24 the condition of the peritonsillar phlegmon was the same, there was a purulent discharge, the swelling at the angle of the jaw had increased. Rigors and headache set in and the complexion was that of septic infection; the rigors recurred and patient became delirious.

On the twenty-fifth coma set in and all the signs of phlebitis of the left cavernous sinus were present. The cervical swelling, which had much increased, was now freely opened, giving vent to pus. An intra-venous injection of electrargol was administered, also 500 c.c. of artificial serum subcutaneously. The patient expired the next day in a delirious condition.

The autopsy showed that the cavernous sinuses were filled with clot in process of disintegration; all the other sinuses, the jugular veins, and even the latero-pharyngeal veins appeared healthy. There was no disease of the ears, orbital cavity, sphenoidal or ethmoidal sinuses.

The author remarks that though pathological evidence was wanting as to the direct route of infection of the cavernous sinuses, doubtless it took place through the pharyngeal veins.

As to aetiology, the writer ascribes this terrible complication of what at first seemed to be a simple peritonsillitis to special virulence of the septic organisms present.

H. Clayton Fox.

### NOSE.

**Crockett, Eugene A. (Boston).**—*What Type of Operation is best adapted for the Relief of Disease of the Frontal Sinus?* "Boston Med. and Surg. Journ.," January 28, 1909.

The author begins by saying that experience has taught him to avoid operation in acute conditions, and to reject in practically every case the

"more radical operation popular in the German clinics," and to substitute a simple operation of his own. His conclusions, given after particulars of several cases and a short description of his own method of operating, are as follows: (1) In acute frontal infections, in mild cases, an ice-bag over the sinus and an adrenalin spray is all that is necessary. In severe cases the patient should, in addition, be anaesthetised and the middle turbinal or its anterior portion removed. The nose should not be packed. (2) In chronic disease, and in all cases where the infection involves merely the frontal sinus and anterior ethmoidal region, with perhaps the antrum filled by drainage, the author's simple operation should be performed and the antrum opened and washed out by means of a trocar. In chronic cases, complicated by orbital abscess, the simple operation combined with simple opening of the orbital swelling is best. In all cases with caries of the ethmoid orbital plate, or where the sphenoidal sinus or posterior ethmoidal region are involved, Killian's operation is best, especially in all hospital cases.

As regards complications, Crockett has never seen lepto-meningitis occur. Sepsis has been his only trouble. In about seventy-five cases a secondary operation has only been performed in three instances.

In Crockett's operation an X-ray photograph is first obtained of the sinus, and through a simple brow incision he makes an opening large enough only to admit the little finger. Through this small opening he curesies and breaks down every septum seen in the X-ray photograph.

*MacLeod Yearsley.*

**Dahmer** (Posen).—*A Method of Making a Wide Permanent Opening of the Maxillary Antrum from the Nose with the Employment of a Mucoperiosteal Flap.* "Archiv für Laryngol.," vol. xxi, Part II.

The writer discusses the various methods of treating suppurative disease of the maxillary antrum. He has been very well pleased with the combined oral and nasal method, and would always employ it when he suspected the presence of ulceration or extensive polypus formation in the antrum. He has operated on seventeen cases in this manner, the after-treatment lasting from five days to four weeks: in no case has there been any recurrence of the disease.

In some cases, however, it was found that although the disease had existed and been treated by lavage for long periods the pathological changes disclosed at the operation were comparatively slight. This fact induced the author to practise, in certain cases, the method which is here described.

The application of 10 per cent. cocaine solution to the anterior end of the inferior turbinal and the nasal floor is followed by the injection of a 1 per cent. cocaine-suprarenin solution beneath the periosteum of the outer wall of the inferior meatus. Ten to twenty-five minutes later a vertical incision to the bone is made from the insertion of the anterior end of the inferior turbinal to the middle of the nasal floor. The anterior third of the inferior turbinal is removed close to its insertion, and the mucoperiosteum of the outer wall of the inferior meatus is dissected up and turned over towards the septum. The bony outer wall of the inferior meatus is then removed with Stacke's chisel and with cutting forceps. The entire antral cavity is scraped out with a blunt curette, while a sharp curette is used for the inner portion of the floor of the cavity. The separated flap of mucoperiosteum is then turned outwards on to the antral floor and fixed there with gauze tampons.

The writer has since 1902 operated on 120 cases by this method. It possesses in his opinion the following advantages: (1) A general anæsthetic is not required; (2) pain and œdema of the cheek are absent; (3) rest in bed is not essential; (4) the patient can carry out the after-treatment without pain by nasal lavage; (5) the opening is permanent, and therefore in event of a recurrent infection lavage can be recommenced without difficulty.

Thomas Guthrie.

## LARYNX.

**Glover, Jules.**—*Traumatic Laryngitis following Intubation and Stenosis of the Larynx in Children.* ("Annales de Médecine et Chirurgie Infantiles," September 15, 1907.) Review by PH. KUHN in "Arch. f. Kind.," Bd. 49, Heft 1 and 2.

The author supposes that it is not simply a question of the co-existence of spasm and a condition of inflammation, but that the spasm seems to him to be a sequel of this latter state.

He enlarges on the physiology of the larynx under pathological conditions in his exhaustive treatise, and also deals with dyspnœa in cases of infantile laryngismus.

He divides the forms of laryngitis into those dependent on changes due to the decubitus position and faulty intubation and pressure from the tube, and those caused by unskilful removal of the tube.

The lesions resulting from the insertion of the tube are found above the rima glottidis and only rarely within the glottis.

He gives a detailed description of these changes, demonstrating them by illustrations.

He considers it impracticable to attempt a similar description of wounds due to extraction of the tube, as it is impossible to distinguish these from those due to unskilful intubation.

Alex. R. Treedie.

## EAR.

**Halász, Heinrich.**—*Fatal Spontaneous Hæmorrhage from the Ear.* "Arch. f. Ohrenheilk.," Bd. 76, Heft. 1 and 2, p. 78.

The patient was an infant, aged two weeks, born at the seventh month, and poorly nourished. Without any antecedent illness blood began to trickle slowly from the right ear, and continued to do so intermittently for five days, when jaundice appeared. Four days after the bleeding started a lump formed in the neck along the sterno-mastoid muscle and about 6 cm. in length. This tumour opened spontaneously by a pin-hole opening and blood trickled from it as well as from the ear. There was no pyrexia. The membrana tympani could not be seen on account of the bleeding and the narrowness of the meatus. Eight days after the onset of the hæmorrhage the child died.

No necropsy was obtained, so that the cause of the bleeding, though fully debated in the paper, remains problematical.

There seems to be only one similar case on record.

Dan McKenzie.

**Smith, MacCuen.**—*Chronic Recurrent Suppurative Otitis Media and its Relation to Mastoid and Intra-cranial Complications.* "The Therapeutic Gazette," October 15, 1908.

The author points out that intermittent discharge is more dangerous

than the constant variety, and dwells upon the value of prophylaxis. He discusses the diagnostic value of leucocytosis and considers that it is a valuable asset as throwing light upon certain forms of sepsis. In recurrent suppurative otitis during the stage of *apparent* inactivity, it may be possible to demonstrate by a blood-examination that a retrogressive metamorphosis is in actual progress. *Macleod Yearsley.*

**Goldsmith, Perry G.**—*Consideration of some Features of Influenzal Otitis and Mastoiditis.* "Canadian Practitioner," February, 1909.

After considering the bacteriological findings, the course of the disease, symptoms, etc., the writer divides the treatment into abortive and operative.

In the abortive, free, unobstructed drainage is the central feature. Sterilising the canal should be done before opening the drum. The incision through the membrane should extend from the roof to the floor, even into the posterior superior wall if there is much congestion in that region. Local anaesthesia preferred but not imperative. Local depletion by leeches may be of value, as also is cold when there is no pus formation—acting as a preventative. Rest in bed with calomel and saline catharsis are recommended. Hot saline irrigations of auditory canal and frequent aspirations with a large Seigle speculum or Sondermann suction apparatus are also considered advisable.

In the operative treatment the writer believes that when decided upon it should be thorough, the cells in the zygoma and tip being freely opened up. If extensive destruction occurs beyond the area of hard bone the sinus should be uncovered. Generally speaking the antrum should be reached but the aditus not necessarily disturbed. In chronic cases which have undergone acute infection, it may be as well in order to retain what hearing remains to leave the tympanic cavity alone.

*Price-Brown.*

## REVIEW.

*Pathologie und Therapie der entzündlichen Erkrankungen der Nebenhöhlen der Nase (Pathology and Treatment of Inflammatory Diseases of the Accessory Cavities of the Nose).* By Dr. M. HAJEK, University of Vienna. With 150 illustrations, mostly original, and two plates of photographs. Third, enlarged edition. Leipzig and Vienna: Franz Deuticke, 1909.

The far-reaching effects of suppurative disease of the accessory sinuses of the nose render their consideration a study of almost perennial interest. Some of the very earliest work in regard to them was the outcome of the initiative of our own countrymen, but our foreign *confrères* have, by their opportunities for autoptical and bioptical investigation and their capacity for research, provided us with most valuable additions to our knowledge. Among the most prominent of these is Dr. Hajek, of Vienna, the third edition of whose work on inflammatory affection of the accessory cavities of the nose is now before us. The remarkable rapidity with which these editions have followed each other afford ample evidence of the appreciation which it has received. As we pointed out in a review of the first edition of this work, Dr. Hajek's tendency is to practise and inculcate a judicious and most praiseworthy conservatism, but his descriptions of the various operations show that he has no anti-operation bias and does not push

his conservatism too far when, as his careful study of the indications for operation prove, he finds reason for surgical interference. We have selected a few points for special consideration. It is needless to say that the various forms of inflammation of the frontal sinus receive the fullest description, but some points may be enumerated to which attention has been newly directed in this edition. Among these may be noted diffuse osteo-myelitis of the flat bones of the skull, X-ray transillumination of the sinus in the occipital-frontal diameter, modifications of Killian's radical operation. One of the most valuable paragraphs is the one dealing with the indications for the radical operation (p. 231). In this the author shows a wise appreciation of conservative and endo-nasal methods, and his views thereon deserve the most respectful attention. He pleads for a patient trial of these methods before resorting to the radical operations. Above all he warns his readers against the bogey (*Schreckgespenst*) of cerebral complications in uncured chronic affections of the frontal sinus as being numerically almost a vanishing (*verschwindend kleine*) quantity, and as occurring in by far the largest number of instances in patients who have not undergone reasonable intra-nasal treatment (p. 235). He is also of the opinion that disastrous results follow the radical operation more frequently than published statistics would lead us to suppose. While fully agreeing with the author we cannot help feeling that an immense factor in the case is the special training and skill of the operator. We can conceive of nothing more dangerous than an excess of zeal in intra-nasal treatment of the frontal sinus by anyone who has not undergone a graduated and, indeed, a prolonged training in the investigation and manipulation of the interior of the nose, both anatomically and clinically. We venture to think that the rare instances (we are convinced that they are rare) of dangerous results from the radical operation have occurred in the practice of operators who have not made a special study of the nose, or of rhinologists who have lost sight of the demands of modern surgery. These operations possess some very special features and demand detail rather than "dash." Nothing could be more judicious or helpful than the short and clear discussion of the indications for the selection of special operation in individual cases (p. 236).

In the section devoted mainly to the sphenoidal sinus the portion on the differential diagnosis of suppuration in the accessory cavities of the second order (posterior) is particularly instructive. It has undergone very important amplification in this edition, and contains some points to which the author drew attention when, as the guest of a London *confrère*, he gave an informal "drawing-room" demonstration in 1904.<sup>1</sup> Thus the diagnosis of suppuration in the sphenoidal cell from the mere influx of pus into that cell is fully detailed, as is also the operation for the partial or radical opening of the cell along with the posterior ethmoidal cavities. The anatomical relation of these latter to the sphenoid is specially dwelt on (p. 341).

An analysis of the first edition of this work will be found in our review of it in the JOURNAL OF LARYNGOL., RHINOL., AND OTOL. for February, 1900, and in the present instance we are simply bringing forward evidence as to the thoroughness with which the author revises and amplifies it in the light of his own experience and of that of the many writers whose works he cites and criticises. His pupils, as well as all progressive rhinologists, will be eager to possess themselves of this edition.

Douglas Grant.

<sup>1</sup> JOURNAL OF LARYNGOL., RHINOL., AND OTOL., vol. xxix p. 61.



THE  
JOURNAL OF LARYNGOLOGY.  
RHINOLOGY, AND OTOTOLOGY.

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**RADIUM THERAPEUTICS AT THE ROYAL SOCIETY  
OF MEDICINE.**

IN another column we are able to present to our readers an abstract report by Dr. Dan McKenzie of the interesting paper on "Radium Therapeutics," read at a meeting of the Dermatological Section of the Royal Society of Medicine, at which a large number of Fellows, as well as of persons of distinction in the medical and social worlds, were present. The lecturer, Dr. Wickham, who is the medical superintendent of the Radium Institute in Paris, is probably the one of all others best situated for judging of the value of this means of treatment, and his report will be read with all the greater interest because of the clearness of the evidence he adduces and the moderation of the conclusions at which he arrives.

Our report is confined mainly to those sections of the lecture which deal with the region of the body with which we are specially concerned, and there can be no doubt that some of the results recorded are most convincing as to the value of the treatment, even if we make full allowance for those spontaneous retrogressions which we rarely hear about and still more rarely see. The filtering-off of the rays which irritate the skin without penetrating the morbid growth ("soft rays") and the utilisation of those having the opposite properties ("hard rays") is strongly insisted on, and appear to afford the key to success in their application. It is thus possible to apply large quantities of radium for a prolonged period in a way that was formerly out of the question.

It is to be hoped that Captain Hayward Pinch will in time be able to show at least equally good results at the Radium Institute at present in the course of formation in London. In any case we may rely on him for the devoted exercise of energy and judgment, stimulated by enthusiasm and tempered by discretion. We trust that the medical profession will watch with care and patience the working-out of the scope as well as the limitations of this valuable resource, withholding premature laudation or disparagement in view of the obvious fact pointed out by Dr. Wickham, that it is only by experience that we can arrive at those details as regards dosage and administration by which alone the fullest benefit without prejudicial after-effects can be expected.

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### **SOME EXPERIENCES IN THE DIRECT EXAMINATION OF THE LARYNX, TRACHEA, AND ŒSOPHAGUS.<sup>1</sup>**

BY A. BROWN KELLY, M.D., D.Sc.,

Surgeon for Diseases of the Throat and Nose, Victoria Infirmary, Glasgow.

#### **INSTRUMENTS AND LIGHT.**

THE tubes I have used have been Rosenheim's for œsophagoscopy, Killian's for bronchoscopy, and lately Bruening's telescopic tubes, which serve both purposes. I have tried Kirstein's and Bruening's lamps, but hitherto have had most satisfaction by reflecting with the ordinary forehead mirror light obtained from a lime light, or from a special lamp on the Nernst principle yielding from 800 to 1000 candle-power which I have had adapted for the purpose.

Most of the examinations and operations to which I shall refer were conducted with the patient lying and under chloroform.

#### **DIRECT LARYNGOSCOPY.**

I have employed direct laryngoscopy chiefly for the examination of infants. This method has enabled me to differentiate the various causes of stridor or noisy respiration in babies, a problem which previously was rarely possible by means of the laryngeal mirror.

In this group I have met with subglottic swelling and associated diminished abduction of the cords due to simple inflamma-

<sup>1</sup> Read at a meeting of the British Medical Association, Sheffield, July 19, 1908.

tion. In several children swellings of various parts of the larynx were found, and some difficulty was experienced in determining whether these were of tubercular or syphilitic origin. I have had one case, which should fall under tracheoscopy but may conveniently be mentioned here, in which the lumen of the trachea was reduced antero-posteriorly to a mere slit, presumably by an enlarged thymus. The passage of the respiratory current through this chink produced a squeaking or wheezing sound according to the amount of secretion present. The baby, a fine healthy boy aged six months when examined in January last, has had no trouble beyond the noisy breathing since, with the exception of several very alarming attacks of dyspnoea which almost proved fatal.

I have examined two cases in which the stridor was congenital. The infants were aged two and four months respectively. In both the appearances were practically the same. The epiglottis was very long, tapering, and its lateral margins were rolled backwards so as to meet and thus form a complete cylinder above. The greatly reduced entrance to the larynx was bounded anteriorly by the ary-epiglottic folds, which met at an acute angle and posteriorly by the arytenoids. During inspiration the arytenoids were sucked markedly forwards and inwards, and thus, partly by their own bulk and partly by approximating the posterior parts of the ary-epiglottic folds, the entrance to the larynx was further diminished. In the small aperture remaining the loose tissue on the summit of the arytenoids vibrated and thus produced the crowing, croaking, or stridor.

These observations confirm the view of Sutherland and Lack that the epiglottis is abnormally long in infants with congenital stridor. They prove that the stridor is produced, not by the ary-epiglottic folds, but by vibration of the loose tissue on the summits of the arytenoids, as I pointed out at the Toronto meeting of the British Medical Association (1). Lastly, they show that the arytenoids are more or less sucked forward during inspiration. The credit of having first drawn attention to this third important factor in the mechanism of the stridor belongs to Dr. D. R. Paterson, of Cardiff, who investigated several such cases by the direct method (2).

For operative purposes I have also made use of direct laryngoscopy. Children in whom it was difficult or impossible to carry out intra-laryngeal procedures have thus been easily dealt with. I have removed papillomata, and by a light touch of the cautery

point have destroyed vocal nodules. The movements of the cords cease during chloroform anæsthesia and thus further facilitate delicate manipulations.

In adults who are unduly sensitive direct laryngoscopy is also applicable. The preliminary drill for training such to the use of the mirror and instruments is then unnecessary. Certain operative procedures, too, may be more easily carried out by the direct method.

#### TRACHEOSCOPY.

Tracheoscopy and bronchoscopy have proved hitherto of most value as aids to the removal of foreign bodies from the lower air-tract. I have had only one such case. It was that of a boy, aged three, into whose trachea a haricot-bean had slipped. When I examined the child thirty hours after the accident the bean was found to be swollen and soft, and lay at the bifurcation. It was removed piecemeal by means of forceps. The recovery was uneventful.

I have had to deal with several children who had had tracheotomy performed and whose respiration became stridorous after removal of the tube. In these I found a more or less ring-shaped stricture of the trachea, which I notched and dilated.

In stenosis of the trachea or bronchi the endoscopic method assists in finding the cause. The wall of the air-passage may be normal and merely bulged inwards, due to pressure from without, as in goitre, or the obstruction may be due to an intra-tracheal or intra-bronchial neoplasm or infiltration, in which event its site, size, and general characters can be determined, and one may succeed in removing a portion for examination if large, or the whole of it if small.

#### ŒSOPHAGOSCOPY.

Œsophagoscopy proves useful in a variety of ailments both for purposes of diagnosis and treatment.

##### (A) *Malignant Disease.*

Malignant disease not uncommonly develops at the upper end of the gullet, or in the deeper parts of one of the pyriform sinuses. Pain in these situations may be complained of for months before the upper edge of the neoplasm becomes visible in the laryngeal

mirror. Such cases may sometimes escape serious consideration and the symptoms be regarded as functional, because the subjects—at least in my experience—are occasionally comparatively young women. I have examined with the tube spatula and short œsophagoscope several cases such as referred to, but in none have I met with the disease sufficiently early and so localised as to warrant operation. It is conceivable, however, that the routine use of the direct method may lead to the detection of these conditions at a stage before they have become inoperable.

Of malignant disease at various depths in the œsophagus I have examined a number of cases. I have thus investigated the situation, appearance and consistence of the growths, and the lumen at the stricture. In some instances I have removed a fragment of the tumour for histological purposes.

#### (E) *Foreign Bodies.*

Œsophagoscopy can render assistance in determining the presence and position of foreign bodies in the gullet and in effecting their removal. Recently I had a case in which a young man swallowed his denture while asleep. Through an œsophageal tube the plate was easily seen about the level of the bifurcation. It was caught with forceps and drawn up to below the mouth of the œsophagus, but in spite of repeated attempts it could not be got through. As the patient's temperature rose to 104° F. and he had considerable pain, it was deemed advisable to have recourse to œsophagotomy without further delay. My colleague, Mr. Maylard, accordingly opened the upper part of the gullet, where he found the plate hooked to the lining membrane. The patient made a rapid and perfect recovery. The plate proved to be a broken one, carrying a single tooth and furnished with a strong hook. While in the œsophagus the hook had been directed upwards, so that it became more deeply embedded the stronger the traction applied.

When the removal of an impacted foreign body is likely to be difficult owing to its shape careful inquiry should be made as to this, and in the case of such articles as dentures a sketch should, if possible, be obtained.

#### (c) *Paræsthesia.*

I have also examined the œsophagus in several patients who thought they had swallowed foreign bodies, *v. g.* pins, pieces of bone, etc., or who, having a sensation of swelling at the upper

part of the gullet, believed something abnormal to be situated there. The temperament of the patient and the duration, intermittence and varying situation of the symptoms usually enable us to distinguish between a foreign body and a paræsthesia; while the gastric origin of sensations, such as that mentioned, is indicated by associated symptoms and confirmed by the result of treatment. It is, nevertheless, often more satisfactory to patient and surgeon to be able to exclude by inspection the presence of a foreign body and organic disease.

(D) *Cicatricial Stricture.*

(Esophagoscopy afforded me considerable service in the case of a woman who had drunk some corrosive liquid in mistake for whisky, and on whom gastrostomy had to be performed because of the cicatricial closure of the gullet. The stricture was almost impermeable, but under guidance of the eye a fine catgut bougie was threaded through it and subsequently a series of bougies until it was sufficiently dilated. The danger of getting into a pocket and perforating the weakened wall was thus avoided.

(E) *Stricture (Congenital).*

It has long seemed to me that cases of dysphagia in which the causation has not been evident have too readily been classed as hysterical. Most of us have met with patients who perhaps for years complained of difficulty in swallowing, and who had to masticate food very carefully, otherwise a choking fit was induced so that it was necessary to rush from table in order to expel the impacted mass. The patients might unquestionably be neurotic, but on the other hand they might not, the only evidence of nervousness being in connection with deglutition. They might also prefer to eat alone. This habit would readily be regarded as another sign of hysteria, whereas it was adopted merely to avoid speaking and laughing while at table, and in order to be able to retch and hawk vigorously should choking take place. In several such cases I, like many others, have passed bougies and have thus procured complete and permanent relief. In one lady, however, whose case presented the features mentioned, before using a bougie I inspected the œsophagus by the direct method. Behind the cricoid a thin, perfectly circular stricture was found which reduced the diameter of the gullet to about 5 mm., so that nothing thicker than a slate pencil could be passed. The mucous membrane appeared

normal and there was no trace of scarring. The patient being under chloroform all question of spasm could be excluded. Having no instruments at hand to treat the stricture nothing further was then done. A few days later, before incising and stretching the ring, as I thought would be necessary, bougies were tried. Beginning with No. 8, a series up to the second largest was introduced with no more difficulty than is usually experienced in entering the œsophagus. The bougies were all passed during one visit, the proceeding was not repeated, and no further treatment was employed. When last I heard from the patient nine months afterwards she wrote stating that she had been very much better since being in my hands, and that she was taking an ordinary diet. Now if I had used bougies before inspecting, this case would inevitably have been classed as one of hysterical dysphagia.

As to the nature of the stricture. The absence of a history of illness or accident such as might have caused ulceration at the affected site and of all trace of scarring is against a cicatricial origin. On the other hand its clean cut outline, normal mucous membrane, and median situation can, I think, only be accounted for by a congenital origin. The one fact that appears to me irreconcilable with this view is that the symptoms did not set in until the patient was about twenty (she was twenty-seven when she consulted me). It should be noted, however, that in congenital narrowing of the pylorus, a condition in some respects comparable to that under discussion, symptoms rarely manifest themselves before early adult life (3).

#### (F) *Diverticulum.*

I have met with at least three cases of diverticulum of the œsophagus, but in only one have I had opportunities of making a direct examination. The patient, a gentleman, aged seventy-five, when first he consulted me complained that he had to masticate very carefully, otherwise pieces of food, especially meat, were apt to stick in his throat. Sometimes he could cough up the impacted mass directly; at others it could not be dislodged for three or four hours, and in the meantime other food might be swallowed. The obstruction was referred to the level of the episternal notch. No pouch could be felt in the neck, the breath was not fœtid, and regurgitation of food took place as mentioned only exceptionally. After having his chest examined I proceeded to inspection by means of the œsophageal tube. The pharyngeal orifice of the

gullet having been passed, a cavity capable of accommodating a walnut lay displayed to view. I have had repeated opportunities of examining this carefully and deliberately, the patient being unusually tolerant. When seen shortly after a meal the bottom of the cavity is lined with light grey *débris*; when fasting the mucous membrane is clean. The lateral and posterior walls of the sac are easily seen, but the anterior wall below bulges forward out of sight. The opening into the lower part of the gullet is presumably in the anterior wall, its situation being indicated by the occasional welling up of a little frothy fluid. The patient is now seventy-seven, actively engaged in business, and has no trouble beyond the need of masticating very thoroughly; an operation for the removal of the sac has not therefore been considered advisable.

With the short time at my disposal I have not attempted to fully describe the symptoms observed or the technique employed in the various affections referred to. My object has been rather to indicate the possibilities of endoscopy of the lower air-passages and œsophagus, and the desirability of making a routine use of the method.

#### REFERENCES.

- (1) *Brit. Med. Journ.*, November 24, 1906, p. 1489.
- (2) *Ibid.*, p. 1447.
- (3) MAYLARD, A. E.—*Brit. Med. Journ.*, 1908, vol. ii, p. 71.

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### THE INDICATIONS FOR AND RESULTS OF OPERATIVE TREATMENT OF PURULENT OTITIS MEDIA, INCLUDING THE SIMPLE AND RADICAL MASTOID OPERATION.<sup>1</sup>

By WENDELL C. PHILLIPS, M.D.,  
New York City.

THE purpose of this paper is to mention the surgical procedures employed in the treatment of acute and chronic purulent otitis media; to outline the indications which necessitate these procedures; and to emphasise their value and results.

On account of the limitations of space, the operative treatment herein described is confined to the tympanic cavity proper, the attic, aditus, mastoid antrum, and mastoid cells, without reference

<sup>1</sup> Presented at the Annual Meeting of the New York State Society, January 26, 1909.



to the operations required in the management of meningeal and labyrinthine complications.

#### INCISION OF THE DRUM MEMBRANE (PARACENTESIS).

Paracentesis is employed principally for the purpose of evacuating the purulent contents of the tympanum, the ultimate object being to relieve pain, limit the extent of the infection, shorten the course of the disease, and prevent complications.

*Indications.*—Paracentesis of the drum membrane is indicated in acute purulent otitis media when attended with intense redness and bulging of the drum membrane, in whole or in part. With these objective symptoms there are co-existing pain and fever, the latter being more marked in young children. The syndrome above described, viz. bulging of the drum membrane, intense aural pain and fever, is invariably of sufficient import to warrant this operation. In infants bulging is a later manifestation than in adults.

Occasionally the purulent process may have continued for some days without rupture, especially in infants, in which event the intense redness gradually assumes a yellowish colour, due to attenuation of the membrane and the accumulation of purulent exudate in the tympanic cavity. An early paracentesis, when performed under strict aseptic precautions, is preferable to a delayed spontaneous rupture. It is a safe rule to open the drum membrane as soon as the diagnosis of purulent tympanitis becomes positive.

A clean cut incision in the drum membrane (and by this I do not mean a puncture) immediately relieves pressure, establishes drainage, and the subsequent healing of the wound takes place with but little damage and no scar tissue. Nature's opening is usually a small jagged hole, the borders of which are more or less necrosed, which as healing takes place is prone to result in scars, and considerable deposits of new connective tissue in the drum membrane.

Paracentesis is also indicated for enlarging perforations which already exist, providing they are too small or are unfavourably located for purposes of drainage. A pin-hole perforation in the presence of an extensive intra-tympanic purulent process affords insufficient drainage. These small perforations are usually accompanied by a sensation of throbbing or pain in the ear or mastoid region. They do not entirely relieve the bulging of the membrane,

especially at the site of the opening. In enlarging the pin-hole perforation it is often necessary to cut both upwards and downwards, in order to establish drainage both of the tympanic and attic region.

The operation should be performed with a long, slender-handled, small-bladed scalpel, and, if possible, under nitrous oxide anaesthesia, inasmuch as the procedure is attended with severe pain. The general direction of the incision should extend upwards and downwards. It may be curvilinear or straight according to the requirements of the individual case, freely opening the drum membrane throughout its entire extent. The old time spear-shaped lancet should be discarded for this operation.

Before operating, the external auditory canal and drum membrane should be carefully cleansed by prolonged douching with a warm bichloride solution 1—3000, and dried with sterile cotton, in order to prevent as far as possible the invasion of new bacteria from without.

Immediately following the incision, similar douching may be continued until all secretions and clots are removed. The patient should remain in bed until the more acute symptoms have subsided. The canal may be lightly tamponed with sterile gauze, to be changed as often as it becomes soaked with secretion, and the suction douche employed.

*Value.*—The operation releases pent-up pus from the tympanic cavity, and thereby retards the tendency to bacterial invasion of contiguous structure, establishes free drainage of inflammatory exudate, shortens the course of the disease, and lessens the danger of mastoiditis, intra-cranial and labyrinthine complications. These results come chiefly from the rapid removal of the inflammatory products from the tympanic cavity, which otherwise might be forced under pressure through the aditus into the mastoid antrum.

*Removal of Aural Polypi.*—Coming to intra-tympanic operations, the most frequent procedure is the removal of polyps or granulation tissue. The presence of polyps or granulation masses in the tympanic cavity and external auditory canal almost invariably indicates a chronic purulent process in the tympanic cavity and its adnexa. The most common attendant symptom is otorrhoea. This tissue is adventitious, and should be removed or otherwise destroyed. When accompanied by offensive discharge and by extensive bone necrosis some form of operation must be employed which will not only remove the polyps, but exenterate the necrosed tissue as well. A simple method of removing large polyps is by

means of a small aural snare. By this procedure the projecting portion of the mass is easily cut away. The remaining base is then canterised, preferably with a bead of chromic acid fused upon the end of a probe. The latter alone is usually sufficient for the destruction of small granulation masses. In this manner the obstructing lesion is removed, but, unfortunately, inasmuch as these growths result from an underlying necrotic process, the proliferations are prone to recur, and recurrence is usually rapid.

Recurrent proliferation of aural polyps in cases wherein all improved methods of local treatment have been faithfully carried out during the interval, indicates a chronic purulent process with bone necrosis which involves the spaces which are accessory to the tympanic cavity proper, for the cure of which the radical mastoid operation becomes imperative.

It will thus be seen that while the results of removal by snare or destruction with escharotics are favourable in the simple cases wherein the disease is confined to the borders of the drum membrane, to perforations, or to portions of the tympanic walls, the results are unfavourable and almost invariably attended with recurrence when the necrosis is extensive, deep-seated, or located in the adnexa, the latter cases always requiring the more radical procedures in order to effect a cure.

It occasionally happens that the large polypoid masses which project into the external auditory canal, spring directly from the exposed dura mater or lateral sinus, in which event their forcible removal is attended with considerable danger to the meninges.

#### OSSICLECTOMY.

Ossiclectomy is an operation by which the drum membrane and ossicles are removed, together with the curettement of granulations and such diseased portions of the tympanic walls, the attic with its outer wall, and the annular ring as may be reached through the external meatus. This operation is employed as a means of curing chronic purulent otitis media by the removal of diseased tissue and the promotion of drainage, and for rendering the tympanic walls more accessible to local treatment. It is an intermediary between the non-operative method of treatment and the radical mastoid operation.

*Indications.*—The intra-tympanic operation is indicated: (1) When a purulent inflammatory process in the middle ear does not respond to local measures of treatment in cases wherein the dis-

eased process is chiefly confined to the drum membrane, ossicles and the tympanic walls.

(2) After recurrence of polypoid proliferations, *unless* such recurrence is associated with evidences of extensive necrosis in the aditus, mastoid antrum, or labyrinth, clinical evidences of which are: continued discharge with foul odour; perforations in Schrapnell's membrane, or along the upper posterior walls of the tympanic membrane; pain in the mastoid region; vertigo, nausea and vomiting.

(3) As a preliminary to the radical operation, either on patients who never have given evidences of complicating symptoms, and in whom it is hoped that improved drainage and subsequent persistent local treatment will effect a cure of the disease; or in patients who demand a preliminary operation rather than submit to the more formidable procedure except as a last resort. Proportionately the number is not large.

*The results.*—In my own experience the results have been favourable in a considerable proportion of all cases operated upon. In carefully selected cases of localised chronic otorrhœa with large perforations in the drum membrane proper, which furnish no history of recurrent mastoiditis, the results have been good, complete recovery being the rule. By "recovery" is meant a cessation of otorrhœa.

The removal of the tissues above mentioned improves the drainage from the tympanic cavity, attic, and the mastoid antrum. Hence even though the otorrhœa may continue, the establishment of drainage tends to lessen the complicating dangers of the disease.

The operation is not wholly without danger. The facial nerve, denuded of its bony covering in the region of the labyrinthine (mesial) wall of the tympanum, may be injured during the operation, with resultant facial paralysis. Dehiscences over the jugular bulb sometimes lead to injury of the blood-vessels at these points with serious consequences. Curettement of polypoid proliferations from the parietal surface of the dura in cases where the tegman has become destroyed by necrosis, has been known to cause serious meningeal involvement.

The chorda tympani nerve which runs in the posterior fold of the drum membrane is often severed with resultant derangement of taste on the corresponding side of the tongue. This injury is negligible.

## THE SIMPLE MASTOID OPERATION.

*Indications.*—A simple mastoid operation is indicated whenever a purulent inflammatory process has invaded the mastoid antrum and mastoid cells with the following evidences :

(1) Pain over the mastoid region. The pain is deep-seated, and continuous, and radiates over the entire side of the cranium. The facial expression is that of anxiety and suffering.

(2) Tenderness on pressure over the mastoid cortex. The localising points of tenderness are found over the mastoid antrum, the mastoid tip, along the zygoma and about the entrance of the mastoid emissary vein. Tenderness is sometimes entirely absent.

(3) Drooping of the postero-superior canal wall, and bulging of the drum membrane which does not diminish as a result of paracentesis.

(4) Fever. The rise in temperature is not characteristic, but is more marked in infants and young children.

(5) Discharge. The discharge may be simply excessive with a tendency to increase rather than diminish, it may be of virulent type, or a sudden cessation of discharge may take place with simultaneous increase of mastoid pain. A prolonged profuse aural discharge which resists all approved measures of local treatment, including paracentesis, is considered by many otologists to furnish sufficient indication for the performance of the simple mastoid operation. Some recent experiences have led me to believe that, given an acute purulent otitic inflammation with foetid odour, wherein it has been demonstrated that the invasion has been one of the more virulent types of pathogenic bacteria and in patients of weakened vitality, if the discharge manifests no tendency to abate after six or eight weeks, a mastoid operation must be seriously considered. In the majority of cases of this type, occurring in my practice, extensive disease of the mastoid cells has been found.

(6) Subperiosteal post-auricular swelling, with or without superficial abscess.

(7) The operation is imperative in the presence of symptoms of intra-cranial complications or of purulent labyrinthitis.

(8) The advent of facial paralysis. This complication invariably indicates the necessity for an immediate mastoid operation, on account of the intimate relationship which exists between the facial canal and the labyrinth.

(9) Blood examination in conjunction with other symptoms of

mastoiditis is a great diagnostic value. A high leucocytoses and polymuclear percentage indicates the presence of infection in some portion of the body.

In addition to the above-mentioned indications, it may be stated that on account of the manifest danger of serious complications, the mastoid operation is a life-saving measure, and although it is performed primarily in the interest of the life of the individual, there are secondary considerations which materially enhance its value, and, as a consequence, are worthy of note at this point.

The mastoid operation in acute mastoiditis quickly terminates a purulent necrotic process which otherwise might become chronic and attended with all the train of deleterious and dangerous results which accompany this troublesome affection. To mention them is sufficient—(1) Necrosis of bony areas which are closely related to vital structures; (2) the prolonged and constant danger of serious labyrinthine and intracranial complications; (3) loss of hearing.

It will thus be seen that even though a patient suffering from acute mastoiditis might recover from the acute symptoms without loss of life, such recovery is prone to be followed by the sequelæ above-mentioned, whereas an operation, skilfully performed in due season, brings to an end the purulent process, *with perfect hearing results.*

The time for operative interference is ever dependent upon a satisfactory diagnosis of the presence of destructive purulent inflammation in the mastoid cells. Just when the exact time has arrived may not be measured by days or hours, but the simple mastoid operation should be performed in acute purulent inflammation which involves the mastoid cells whenever a permanent remission of symptoms has not been effected either by drainage through the drum membrane, rest in bed, or the employment of local measures such as have been described in a previous paper.

Much has been written in favour of a so-called early simple mastoid operation, and if by this is meant operation as soon as it can positively be demonstrated that a purulent inflammatory process has invaded the mastoid cells, which is too virulent and too extensive to offer any hope of spontaneous cure either by drainage or absorption, then the early operation is to be recommended.

On the contrary, it is not wise to operate immediately upon every patient who has tenderness on pressure over the mastoid antrum, during the first three or four days of the attack, for the

reason that in the milder cases it is quite possible for drainage through the aditus combined with local absorption to effect a cure without operation; and further, it is deemed safer in the interest of the patient to operate after nature has thrown out some protective limitations to the disease within the mastoid cells.

There are some dangerous indications which call for immediate operation whatever the concomitant symptoms may be, and among these are—

(a) An acute mastoiditis occurring in an ear which is the seat of chronic purulent otorrhœa.

(b) Upon the advent of symptoms of labyrinthitis, the chief of which are nausea, vertigo, and nystagmus.

(c) The appearance of facial paralysis.

(d) The appearance of symptoms of intra-cranial involvement.

Without entering into a description of the operation, it may be stated that the simple mastoid operation, when properly performed, should extend to the limitations of the disease itself, and this usually calls for the removal of the mastoid cortex, the complete exenteration of all mastoid cells, especially the large cells at the tip, those posterior to the sigmoid flexure, in the zygoma; and the curettement of all granulations and necrosed areas and the establishment of post-aural drainage of the mastoid cells and the aditus.

The simple mastoid operation, when skilfully performed and previous to the advent of serious complications, yields brilliant results, and is practically without danger to the life of the patient.

The results may be summed up as follows:

1st, Relief of pain and suffering; 2nd, cure of destructive purulent process which otherwise menaces life comfort; 3rd, preservation of the function of hearing which otherwise might become destroyed on account of continued suppuration. It is the most invariable rule that the simple mastoid operation when performed for the cure of acute purulent otitis media and mastoiditis results in perfect hearing, and this is no mean argument in its favour; 4th, it lessens the tendency to serious intra-cranial and labyrinthine complications, and the possibilities of recurrence are rare.

#### RADICAL MASTOID OPERATION.

The radical mastoid operation, strictly speaking, is performed for the cure of chronic purulent otitis media. By chronic purulent

otitis media I mean a number of pathological conditions in the middle-ear space, all having one symptom in common, viz. a persistent otorrhœa. The more common conditions producing a persistent otorrhœa are—(a) bone necrosis, confined to various parts of the temporal pyramid; to the walls of the tympanic cavity, due to inflammatory exudative inflammation of the mucous membranes, or to pressure necrosis from the ingrowth of cholesteatoma or other new growths. (b) Tubercular or syphilitic bone disease in the temporal bone. (c) A purulent inflammatory disease of the lining mucous membrane of the tympanic cavity and its adnexa. Bone necrosis usually attacks some portion of the ossicular chain, the tympanic walls, the aditus, the antrum of the mastoid, and the mastoid cells.

It will thus be seen that we have here to deal with a complex disease, and one attended with difficulties in the way of treatment, extreme annoyance to the comfort of the individual both on account of loss of hearing and offensive discharge, and considerable danger to life on account of the possibility of intra-cranial complications.

Briefly stated, the purpose of the radical mastoid operation is to convert the external auditory canal, tympanic cavity, the attic, aditus and antrum, mastoid and antrum and mastoid cells, when diseased, into one wide open cavity; to eviscerate all granulations and diseased bone, destroy all membranous and muscular tissue lying within these limits, including the membrana tympani, and to effect dermatisation throughout the entire area, in the hope that by so doing the ramification of the disease will be terminated once and for all.

While the general statement that the radical mastoid operation is performed in order to effect a cure of chronic purulent otitis media is correct, it must be understood that it is not indicated when the disease is confined to the tympanic cavity proper, but is to be performed only when such typical indications as are about to be defined are present.

The operation is a capital one, requiring extensive dissection in the most complicated bone in the human body.

The radical operation is indicated—(1) When a permanent cessation of the purulent process has not been effected by prolonged local intra-tympanic treatment, combined, if necessary, with such minor operations as removal of granulations, enlarging perforation, etc. (2) When a cure has not been effected by the removal of necrosed ossicles and the curettage of the middle ear. (3) When



acute symptoms of mastoiditis supervene in otitis media purulenta chronica. (4) When a sudden cessation of the pus discharge produces chills, fever, vertigo, pain, or other unusual symptoms. (5) The appearance of facial paralysis during the course of chronic purulent otitis media. (6) Attacks of vertigo, nausea, and vomiting, indicating that the necrotic process involves the labyrinth. (7) In all cases of complicating intra-cranial or lateral sinus involvement, the latter being characterised by symptoms of general sepsis, increase of leucocytes and polymuclear percentage. (8) Where there are positive symptoms of cholesteatoma in the mastoid antrum. (9) Where there are fistulous openings in the cortex of the mastoid process or in the osseous canal wall. (10) Whenever extreme depression or other symptoms of disturbed mentality accompany the disease.

Many observers emphasise the importance of the locations of the perforations in the drum membrane, and contend that when a perforation is so located that its margin encroaches upon the bony wall (especially the upper wall) of the tympanic cavity, such perforation indicates a dangerous form of purulent otitis media, assuming that the marginal form is an indication of disease of the bone in the immediate locality.

For the same reason perforations located within the limits of Schrapnell's membrane, which covers the outer wall of the attic, are considered to represent the dangerous type.

The operation is contra-indicated—(1) When the purulent process is tuberculous and accompanied by advanced general tuberculosis. (2) In advanced pernicious anaemia or albuminuria, and in cachectic diabetes. (3) It is usually contra-indicated in young children. (4) In all cases where the disease is confined to the ossicles and tympanic cavity. (5) In adults who have scanty otorrhea without odour, with improper opening of the drum membrane, behind which are retained masses of secretion. (6) In all cases where it is possible to effect a cure by any of the other methods described.

*Results.*—The results obtained by the complete radical mastoid operation, assuming that the treatment, both operative and post-operative, is up to the recognised standards, are favourable as a whole, but are influenced by the kind and nature of the pathological findings.

For instance, in tuberculosis and syphilitic necrosis the results are less favourable than would otherwise be obtained on account of the underlying constitutional dyscrasia.

At the Western Section Meeting of the American Laryngological, Rhinological, and Otological Society, held in Philadelphia on January 9th, 1909, I reported the results on otorrhœa, hearing, and life from one hundred and twenty-three (123) radical mastoid operations.

The cases here reported do not cover any definite period of time, but are selected as a series which may fairly well represent the results of the complete operation.

In some instances the records are incomplete for certain of the results which I desire to emphasize.

1st. The results on otorrhœa.

2nd. The results on hearing.

3rd. The results on life.

On the otorrhœa the results are recorded in 103 of the 123 cases.

Of the 103 recorded results there were 84 cures, and in 18 the discharge either persisted, became intermittent, or appeared in connection with occasional exfoliations of epidermis or cholesteatoma.

On the hearing the results are recorded in 75 out of the 125 cases.

Of these 75 cases the hearing was improved in 28. It was unchanged in 25, and it was impaired in 22.

On life: Out of 123 cases there were 7 deaths from complicating lesions. In none of the fatal cases save 4 did the operation hasten the fatal issue, and in nearly all the radical procedure was but an incident in operating for the relief of complicating lesions, sinuss thrombosis, brain abscesses, and meningitis.

In one case heretofore reported, I discovered at the time of the radical operation a large abscess of the temporo-sphenoidal lobe which had never given localising symptoms or interfered with the usual duties of the patient.

Five of the cases included in this list are of recent date, and the results are still uncertain.

#### ON THE OTORRHŒA.

The purulent discharge is cured whenever healthy dermatisation of the entire cavity is complete. This is not possible in every case, inasmuch as in a limited proportion of cases the surgeon has to contend with impaired general health, constitutional dyscrasias, and deep-seated disease of the more remote areas of the ear, especially the Eustachian tube.

Even though a slight post-operative discharge persists, the operation accomplishes the removal of large areas of the necrosed bone and granulations, and opens up the entire field to inspection and local treatment. Any remaining discharge is usually without danger to the patient's life.

#### ON LIFE.

Inasmuch as this operation upon the temporal bone serves to eradicate an infective necrotic process from an area which is in close proximity to the cerebrum, cerebellum, lateral sinus, labyrinth and facial nerve, it becomes, when timely performed, a life-saving measure. Clinical experience furnishes abundant proof of this assertion.

#### ON HEARING.

The operation is never performed in the interests of the hearing function, and a statement to that effect should be made to the patient before operating. Nevertheless, the hearing results are of much interest and importance. Providing the labyrinth is intact and no inflammatory adhesions exist, the hearing either remains the same or is improved by the operation. It is made worse in but a very small percentage of cases. Finally, regarding the effect upon the hearing function, the operation accomplishes the removal of adventitious tissue of a dangerous type from the temporal bone and middle ear, and converts the membranous linings into epithelium free from necrotic food.

In the above remarks I have referred only to the complete radical operation. Attempts have been made from time to time, first by Körner, and later by Heath in England, and Bryant and Ballinger in America, to modify the operation by leaving the ossicles and membrana tympani intact, in the hope of bettering the hearing results. They are all incomplete operations, inasmuch as the annular ring, the outer wall of the attic and ossicles, three of the chief centres of necrosis in this disease, are necessarily left untouched. It is the general feeling among surgeons, and especially among otiatric surgeons, that the hope for a successful outcome from an operation lies chiefly in the complete eradication of the disease. I am therefore extremely sceptical as to the results of any incomplete operation in cases of extensive necrosis of the tympanic wall, ossicles, attic, aditus, and mastoid antrum.

## SOCIETIES' PROCEEDINGS.

### PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

*Meeting on Friday, May 7, 1909.*

DR. DUNDAS GRANT, *President, in the Chair.*

*Abstract of Proceedings by* DR. DAN MCKENZIE.

THE following cases and specimens were shown:

#### CASE OF FIXATION OF VOCAL CORD, ? ANEURYSM.

BY DR. DUNDAS GRANT.

The patient, a man, aged forty-two, first seen April 21, 1909, complaining of loss of voice of ten weeks' duration which developed in twenty-four hours. The left vocal cord was found to be fixed in the middle line and its edge quite concave. The left pulse was extremely feeble as compared with the right, and tracheal tugging could be elicited. The apex-beat was displaced downwards to the left.

A skiagram was taken, and a drawing of the screen picture by Dr. Ironside Bruce was also shown.

Dr. Bruce reported that the examination of the thorax in the antero-posterior direction showed marked increase of the median opacity of the chest towards the left; this increase of opacity was abrupt and rounded in outline. In the antero-lateral right direction examination showed marked bulging of the arch both in the anterior and posterior direction. From the X-ray point of view, therefore, this case was one of aneurysm of the transverse and descending aorta.

#### CASE OF EPITHELIOMA OF EPIGLOTTIS AND VESTIBULE OF LARYNX.

BY DR. DUNDAS GRANT.

The patient, a man, aged sixty-three, first seen on April 14, complaining of sore throat of four months' duration.

The right two thirds of the epiglottis was occupied by a thick, pale, papillated swelling, which turned backwards over the vestibule of the larynx in the form of a horn, and blended with a swelling of

the ary-epiglottic fold. Iodide of potassium was given for a week without result. The epiglottic swelling was extremely hard to the touch. There were no enlarged glands. The prominent portion of the epiglottis was then removed by means of a snare for microscopical examination. The stridor which was present was not relieved, the aperture of the larynx being still almost occluded. The microscopical examination revealed typical epithelioma extending into the cartilage. Tracheotomy has been performed, and it would probably be agreed that a radical operation was out of the question.

A CASE OF LEFT BRONCHOCELE IN A WOMAN, AGED FORTY. THE LARYNX WAS DISPLACED AND DISTORTED; THE NARROWED LUMEN OF THE TRACHEA WAS PLAINLY VISIBLE JUST BELOW THE CORDS.

BY DR. H. J. DAVIS.

The patient had only been seen once (April 27). She was hoarse, occasionally aphonic, and had dyspnœa. The left cord was thickened. The right was hardly visible owing to the displacement of the larynx to the left.

Opinions were desired as to question of removal of the tumour. The laryngoscopic appearance was peculiar.

MR. H. TILLEY said there could be no doubt that the proper treatment applicable to the case was the removal of the tumour. This could be done without danger, and might certainly be expected to remove all the symptoms from which the patient was suffering.

DR. DONELAN asked why the tumour had been called a bronchocele, and suggested that it was more probably an adenoma of the thyroid.

MR. W. STUART-LOW said that on swallowing the tumour was not elevated properly speaking. It moved, but the movement was rather a heave than an elevation. He was of opinion that it was not a thyroidal tumour, but a bronchial cyst. In any case the proper treatment was removal by operation.

MR. FITZGERALD POWELL thought the tumour was thyroidal because he had observed it moved during the act of swallowing. It could be readily excised through the usual transverse incision. He had found it of benefit in these cases to make a counter-opening below the transverse incision in order to facilitate drainage of the large wound.

DR. DONELAN asked what need there was for drainage, since these wounds usually healed by first intention.

MR. ROUGHTON thought the tumour was a cyst of the lateral lobe of the thyroid. Operation was the proper treatment, but he would advise waiting until the pustular eruption on the skin over it had subsided. A drainage-tube should be inserted for the first twenty-four hours after operation, but no further drainage was necessary.

DR. H. J. DAVIS agreed that it was probably a cystic adenoma. The eruption was the result of an application of an ointment of iodide of

mercury and potassium iodide. He anticipated that the laryngeal condition would be improved by removal of the tumour.

A CASE OF CHRONIC EMPYEMA OF THE ANTRUM IN A WOMAN, AGED SIXTY-EIGHT; THE DISEASE WAS NOW MALIGNANT (FIBRO-MYXOSARCOMA).

BY DR. H. J. DAVIS.

He had first seen this patient last March. "She had had many polypi removed from the left nostril for nine months with little benefit."

Transillumination pointed to empyema of left antrum. This was punctured and found to be full of pus. Patient admitted into the West London Hospital, and the radical antrum operation performed. The antrum was a fine shell of bone full of pus and polypi, but in one part the granulations removed looked very suspicious of malignant disease. This was, however, negatived by microscopic examination.

The patient did not get well, and slight proptosis and bulging of the cheek became apparent. A week ago the antrum was again opened and scraped, and the tissue examined was reported to be a "fibro-myxosarcoma." The palate and post-nasal space were not involved, and it was proposed to remove the left superior maxilla. The patient was frail, but general health was good.

Mr. H. BARWELL asked if this was supposed to be a case of chronic suppuration of the antrum becoming malignant, because if so, it was an important point which had been based upon somewhat slender evidence. If removal was undertaken an extensive clearing out of the cervical glands would be necessary, as they seemed to be enlarged.

Dr. H. J. DAVIS, in support of the supposition that malignancy had supervened upon chronic suppuration, related the history of the case in detail. The patient had suffered from nasal polypi for six or seven years and these had been periodically removed, but no effort had been made to ascertain the condition of the antrum until the patient came under his care. Then the antral suppuration was discovered, and the polypi were submitted to pathological examination, with the result that it was found that while the more superficial polypi were mucous, those which were deeper were malignant in structure.

A CASE OF LARYNGEAL GROWTH.

BY MR. DE SANTI.

Patient, a woman, aged between forty and fifty, with a history of hoarseness followed by variable, and finally complete loss of voice, of some two years' duration. No pain or breathing trouble

until quite lately. Examination revealed a tongue-like, movable, soft growth apparently growing from the anterior commissure of the larynx, and extending forwards between the two vocal cords. It moved up and down on respiration. A piece had been removed by endo-laryngeal forceps, and microscopically was pronounced to be an "angioma." His opinion was that the growth was a soft fibroma.

Dr. C. HORSFORD said the growth seemed to spring from the middle of the vocal cord in such a position that it could be easily removed.

The PRESIDENT agreed with Dr. Horsford, but thought that the condition of the cord was open to question. It was red and rough on the surface.

#### LARYNGEAL CASE FOR DIAGNOSIS.

By MR. DE SANTI.

Male, aged fifty-four, complained of sore throat, husky voice, pain on swallowing and speaking, and some difficulty of breathing of four months' duration. He had always been a healthy man, there was no history of syphilis or any signs of that disease, and the lungs were healthy. Examination of the larynx revealed considerable bilateral edema and swelling of the ventricular bands, the latter being in apposition anteriorly for about half their length, and the breathing space being confined to the posterior half. There was also oedematous swelling, especially on the right side, posteriorly extending towards the cricoid plate. There seemed to be some ulceration of the right half of the larynx posteriorly, and immobility on that side; some glandular enlargement on the right side of the neck. The case seemed to be of a malignant nature, and opinions were invited as to diagnosis and treatment.

Dr. JOHNSON HORNE was averse from the diagnosis of malignancy; he thought it was probably associated with some general condition of the patient's health.

Sir FELIX SEMON agreed with Dr. Johnson Horne that there was no evidence of malignancy. There was general infiltration, and the cords lay very close together with a triangular opening behind.

Dr. WILLIAM HILL advised the removal of a piece of tissue by the direct method in order that a microscopic examination might be made.

#### LARYNGEAL TUBERCULOSIS IN A MAN, AGED FORTY-THREE.

By Dr. DONELAN.

Seen first fifteen months ago. Epiglottis a mass of tuberculous infiltration and ulceration. Patient declined amputation. Treat-

ment by rest, open air, lactic acid and guaiacol locally and internally produced considerable improvement. Had a small focus in both lungs which had been quiescent for a long time. Opinion desired as to whether this case was likely to receive further benefit by treatment by tuberculin T.R.

The PRESIDENT thought the case was making excellent progress under Dr. Donelan's present treatment, otherwise he should have recommended the use of the galvano-cautery.

Mr. HAROLD BARWELL said this seemed to be one of those cases of chronic, mild, and, if he might use the expression, non-malignant tuberculosis, occupying the border-line between lupus and tuberculous disease, and affecting the epiglottis chiefly. He also was of opinion that treatment by means of galvano-puncture would be preferable to any attempt at removing the epiglottis.

Mr. H. TILLEY was in favour of removal of the epiglottis. If galvano-puncture was employed many applications would be required before enough cicatricial shrinking occurred, whereas the whole diseased area could be entirely removed in a couple of sittings, and complete healing would probably ensue.

Dr. DONELAN replied that operation had been offered to the patient but he had refused.

#### CASE OF RECURRENT OCCLUSION OF NARIS.

BY DR. DONELAN.

Man, aged twenty-six. Had complete occlusion of left nasal cavity from depleted septum, large bony spur and adhesions. These were removed and a fair passage formed, which, however, closed again. A second operation consisted in detaching the base of the bony and cartilaginous parts of the middle third of the septum by means of special chisel, without disturbing mucous membrane of right side, removal of all bony and synechial obstructions. Septum maintained in new position during healing. Though complete freedom was obtained on this occasion synechiæ have again almost completed the occlusion. Suggestions as to further treatment requested.

Dr. DAVIS remarked that the obstruction was due to bowing of the septum. Probably there never had been a free passage on the left side.

Mr. H. TILLEY recommended that the adhesions be cut away and the submucous resection performed from the left side.

Dr. HORSFORD had found simple nasal splints of celluloid effective in preventing adhesions re-forming.

The PRESIDENT thought the case was one for submucous resection. He had found his patients very intolerant of celluloid splints or any similar simple device in the nose, and he therefore avoided them.

Dr. DONELAN said the nose had been blocked by bone, and so he had been unable to perform the submucous resection. He expressed agreement with Mr. Tilley's suggestion to operate from the left side.



## CHRONIC SUPPURATION IN THE LEFT SPHENOIDAL SINUS; RECOVERY.

BY MR. HERBERT TILLEY.

F. L.—, female, aged twenty-seven, first consulted the exhibitor early in 1903 for "chronic nasal catarrh and headache." The headaches were frequent and severe, and chiefly fell on the left occipital region and rather to the left of the vertex. Nasal examination showed an appearance somewhat similar to unilateral atrophic rhinitis, except that the crusts which collected in the upper and posterior region of the nose did not possess the characteristic smell. Irrigation of the sphenoidal sinus caused pain over the occiput, and pus could be blown out of the sinus when a cannula was inserted.

In May, 1903, the sinus was opened and as much of the anterior wall as possible removed; the middle turbinal was also removed. The patient obtained great relief from her symptoms, and disappeared from the clinic.

She returned again last autumn with a return of her old symptoms, in addition to much mental depression.

The sinus was again opened up and found to be filled with pus. The margins of the old opening were freely cut away, as also were the neighbouring posterior ethmoidal cells. Since the operation the margins of the openings into the sinus have been frequently cauterised with the galvano-cautery and strong nitrate of silver (100 gr. ad 5j), and for the past month there has been no tendency to cicatricial closure of the opening. Her symptoms were greatly but not entirely relieved; she occasionally suffered from headaches, but of greatly diminished intensity, and the nasal discharge had practically ceased.

Dr. WATSON WILLIAMS had found it useful to remove the anterior part of the floor of the sinus after opening up the anterior wall.

Mr. STUART-LOW doubted whether there was actual recovery, for pus was still to be seen on the septum and walls of the nose. He observed that the opening was very far down, and suggested that the opening was not in the sphenoidal cavity at all, but in an ethmoidal cell.

Dr. JOHNSON HORNE agreed with the last speaker. Recovery from sinus suppuration was a comparative term. It reminded him of an Irishman's definition of *grippe* as a disease which lasted six months after it was cured. He was not at all sure of the anatomical relations in this case, and so was unwilling to say whether or not the opening led into the sphenoidal sinus.

Mr. W. CHICHELE NOURSE felt certain that the opening was into the sphenoidal sinus. It lay rather low undoubtedly, but still it was on the anterior aspect of the sphenoid bone. Some pus could be seen welling out of the cavity. In dealing with these cases where there was a great

tendency for the artificial opening into the sinus to close, he had found much benefit from inserting a captive tampon soaked in glycerine of carbolic acid and glycerine into the opening, the silk thread by which it was attached being brought out of the nostril. This kept the sinus open and aided the healing of the mucous membrane. The tampon was changed every other day.

Mr. ROUGHTON suggested that a skiagram should be taken with a probe in the opening to show that it was actually the sphenoidal sinus which was involved.

Mr. SCANES SPICER agreed with the last speaker, and remarked that the opening might be an inch from the posterior wall of the sinus.

Dr. HILL held that Mr. Tilley had done his case great good. Nobody cured these cases when operation was necessary. He also was sure that this was the sphenoidal sinus.

The PRESIDENT was of opinion that the opening led directly into the sphenoidal sinus, but he thought it lay lower and further out than the original ostium as the result of the contraction of the newly formed tissue.

Mr. H. TILLEY was glad of the opportunity which was afforded him of replying to his critics, friendly and otherwise. He was able to speak authoritatively on the case, for he had watched its progress from first to last and had operated himself. Her state of health when first the patient came to him was miserable. The headaches and pain were so severe as to incapacitate her for work, but after operation she had been able to perform her duties with comfort. No doubt, as Dr. Watson Williams and Mr. Stuart-Low had observed, the aperture was low. But the reason for that was that the anterior sinus-wall had been very small, so that when it was all removed the resulting opening was only about the size of a slate-pencil. Anticipating a closure of this small opening he had passed a long chisel into the nose and had broken down the floor of the sinus. If Mr. Stuart Low had passed a probe into the sinus he would have discovered that the posterior wall lay half an inch behind the anterior wall; this disposed of the question as to whether it was the sphenoidal sinus or not. The opening had remained at its present size for the last three weeks. Regarding the pus which several speakers had seen in the nose, he remarked that after operations of this kind there must be small areas of scar-tissue upon which crusts would form, but this was a very different state from that in which foul pus kept pouring out of the sinus.

CASE OF POST-CRICOID EPITHELIOMA IN A WOMAN, AGED THIRTY;  
REMOVAL BY LARYNGECTOMY.

BY MR. WAGGETT.

The case was an instance of comparatively early diagnosis of post-cricoid epithelioma, very commonly seen in women between the ages of thirty and forty, and of which the exhibitor had never seen an instance in men of the same age. The exact limits of the disease were made out by the direct method before operation. As the arytenoids were, as usual, cedematous and probably involved, the larynx was removed and the truncheated trachea stitched to a button-hole on the supra-sternal notch, with a view to the imme-

diate, as well as to the subsequent, safety of the patient. After a sufficient margin of healthy mucous membrane had been removed, what remained of the hypo-pharynx and upper section of the œsophagus formed a ribbon, which, in its retracted condition, appeared to be about 10 mm. in breadth. This was, with some difficulty, stitched round a drain-tube of 6 mm. diameter, passed through the nose. After removal of the tube, some four weeks after the operation, the patient could swallow bread with comparative ease. The œsophagus was rendered water-tight by the suturing of muscular and connective tissue about its anterior aspect, and rapid healing took place, without septic phenomena.

Sir FELIX SEMON congratulated Mr. Waggett upon the excellent result of the operation, but joined issue with him in the statement that the disease was "very common" in women. He himself had only seen four or five cases in thirty-three years, and surely it could not be very common when that was the case.

Dr. WILLIAM HILL said that in general hospital practice these retro-cricoid cases were undoubtedly most commonly seen in women. They were generally called cancer of the œsophagus, but Mr. Waggett was correct in speaking of them as pharyngeal, and not œsophageal, cases. He had seen many such cases and they were usually inoperable. This had been a very early case. Probably we would learn more about them now that the direct method was so frequently employed.

Mr. WAGGETT replied that these cases were undoubtedly common, not so common, however, as enlarged tonsils. Every year at his hospital four or five gastrostomies were performed on young women for retro-cricoid cancer, yet he had never seen one in private practice, nor had he ever seen a case in a young man. This was perhaps the reason why Sir Felix Semon had seen so few of them. This patient owed her life to an intra-venous injection of saline and adrenalin administered during the operation at the instigation of his colleague, Mr. J. Gay French.

#### ABNORMALITY IN RIGHT TONSILLAR REGION.

By Mr. NORMAN PATTERSON.

Patient, aged forty-five, had projecting downwards, forwards, and inwards from right tonsil a pointed process. It could be traced upwards into the substance of the tonsil, and appeared to extend towards the point of attachment of the normal styloid process. The free portion was evidently cartilaginous, but the part situated in the tonsil appeared to be bony in structure. A skiagram accompanied the case.

Dr. DAVIS said the bone was probably connected with the hyoid.

The PRESIDENT considered it a case of ossification of the stylo-hyoid ligament, its oblique position and projection into the tonsil being probably the result of traumatism.

Mr. FITZGERALD POWELL thought the condition congenital, and advised the removal of the bony projection.

Dr. LAW remarked that the patient was subject to fits, and so might have sustained an injury without being aware of it.

Mr. WAGGETT said that the skiagram showed the condition to be present on both sides.

Mr. PATTERSON, referring to the opinion that it was an ossified stylo-hyoid ligament, reminded the Section that this ligament was attached to the lesser, and not to the greater corner of the hyoid. The possibility of traumatism was not borne out by the history.

#### CASE OF FIXATION OF RIGHT CORD OF INTERMITTENT OCCURRENCE IN A MAN, AGED FORTY.

By Dr. JOHNSON HORNE.

The PRESIDENT hoped Dr. Horne would show the case again if possible when the fixation was present. It was now absent.

#### SPECIMEN OF PEDUNCULATED POLYPUS.

By Dr. WILLIAM HILL.

This was diagnosed and removed from the trachea of a child, aged seven, by the aid of the tracheoscope.

#### LARYNGEAL GROWTH IN A MAN, AGED FORTY-EIGHT.

By Dr. W. H. KELSON.

Slight hoarseness was first noticed six months ago and pain in throat, now shooting up to the left ear.

On examination a warty-looking growth was visible, involving the inner surface of epiglottis, right arytaenoid and ventricular band, and obscuring view of right ventricular cord. It also extended on to the pharyngeal wall; great loss of movement on right side of larynx. Enlarged glands could be felt in neck. There was a history of syphilis twenty years ago, but pot. iod. in 15-grain doses produced no improvement. Chest, *nil*; no tubercle bacilli found in sputa.

#### CASE OF RETRO-BULBAR NEURITIS FROM PURULENT DISEASE OF THE SPHENOIDAL SINUS, CURED BY DRAINAGE OF THE SINUS.

By Dr. DUNDAS GRANT AND Dr. DAN MCKENZIE.

A female, aged twenty-nine, first attended hospital five years ago with nasal polypi. After three or four curettings of the ethmoidal

region, at considerable intervals, recurrence ceased, and although complaint was made of discharge "down the back of the throat" the patient seemed to be quite well. A few weeks after the last curetting some interference with the vision of the left eye was noticed, but the patient did not seek advice on that account until five months later (November, 1908), when she went to the Royal Eye Hospital (Moortfields). Here she came under the care of Mr. Claude Worth, who diagnosed retro-bulbar neuritis, probably caused by the nasal suppuration. In consequence of this opinion the left sphenoidal sinus was opened up in order to provide free drainage. Its mucous membrane was felt to be thickened and velvety. Rapid improvement in the vision of the left eye followed the operation and the vision was now normal.

The PRESIDENT stated that the sinus answerable for the involvement of the optic nerve was probably the posterior ethmoidal. When he opened the sphenoidal sinus he opened the posterior ethmoidal as well, and thus relieved the nerve. The orifice now visible was not the original ostium, but lower and more external.

Mr. BROXNER protested against the use of the term "retro-bulbar neuritis," which was now obsolete. Besides, retro-bulbar neuritis was always bilateral. Consequently he felt some doubt as to the diagnosis, and referred the symptoms to ethmoidal cell suppuration.

The PRESIDENT referred to the description of retro-bulbar neuritis as given in Prof. Fuchs's "Text-book of Ophthalmology" in support of what he had advanced. In regard to the possibility of its unilaterality, Onodi had shown that it could be unilateral and even contra-lateral, according to the anatomical disposition of the posterior ethmoidal cells.

#### CASE OF INFILTRATION OF THE VESTIBULE OF THE LARYNX WITH INTRA-LARYNGEAL FUNGATION.

BY DR. DUNBAS GRANT.

The patient, a woman, aged fifty-three, was first seen April 27, 1909. She had suffered from cough and aphonia for eleven months. On examination of the chest were found evidences of bronchitis and emphysema. She had been a widow for eighteen years and before that was married for five years. Her husband had died of consumption, her father of cancer of the throat. She had no children or miscarriages. By the laryngoscope there was to be seen pale infiltration of the ary-epiglottic folds, which were quite immobile; there was also infiltration of the ventricular bands, and on the middle of the right vocal cord there was an extremely pale, oval swelling with a rough surface, and apparently of soft, almost fluffy consistency. On external examination the

anterior margin of the thyroid cartilage was twisted to the right, and the left ala was almost completely covered by a hard sessile swelling, immovably attached to it, but separated from it in front by a slightly perceptible groove. There were no enlarged glands and no difficulty in swallowing. The induration suggested the probability of a malignant growth, and the oval swelling on the vocal cord was removed by means of forceps for examination. It was extremely soft, and some tissue of a similar nature was removed from the region below the right cord. On microscopical examination it was found to be of a granulomatous nature without the slightest evidence of epithelioma. The patient was accordingly being treated with mercury and iodide of potassium, and so far as a week's treatment would indicate, she seemed to have improved. The case was probably one of tertiary specific infiltration.

The exhibitor brought before the Laryngological Society on February 6, 1903, a case of chronic œdema of the larynx of twelve months' duration, which he thought answered to the description of amyloid disease, but in February, 1904, he showed her again as further developments had indicated that the disease was really a tertiary specific infiltration, which ultimately disappeared almost completely under treatment with iodide of potassium, perchloride of mercury, and mercurial inunctions.

Mr. BARWELL thought the infiltration arose from a slow-going simple chronic laryngitis, and looked upon Mr. de Santi's case, shown at the present meeting, as of the same character.

#### A CASE OF TUBERCULOUS ULCER OF THE TONSIL.

BY MR. LAMBERT LACK.

#### A CASE OF EPITHELIOMATOUS GROWTH OF THE LARYNX.

BY MR. W. STUART-LOW.

Mr. TILLEY said the diagnosis was plain. He asked whether a digital examination had been made, as it was often of value in estimating the extent of these growths. In the present case the epithelioma seemed to be too extensive for operation.

Mr. STUART-LOW replied that he had palpated the growth and had found it unusually soft. According to the history the disease had been first noticed only a month ago. About a third of the tumour had been removed, and Dr. Wingrave had reported that it was an epithelioma.

## A CASE OF LARYNGEAL GROWTH.

BY MR. PARKER.

THE PRESIDENT reminded the Section of the cases of keratosis in the larynx shown before the Laryngological Society which were characterised by the extreme whiteness present in this case. This one was, however, most probably one of epithelioma.

MR. PARKER said he had seen the case for the first time to-day. He thought it was probably malignant.

## LOSS OF SUBSTANCE OF THE SOFT PALATE AND SCARRING OF THE PHARYNX IN A CHILD, AGED SEVEN, DUE TO SCARLET FEVER AT THE AGE OF TWO.

BY DR. WILLIAM HILL.

DR. DONELAN asked what was the condition of the naso-pharynx.

DR. DAN MCKENZIE had observed some muco-pus on the posterior pharyngeal wall, which suggested naso-pharyngeal disease. He had looked with interest for fenestration of the anterior faucial pillars, but there was none present.

DR. HILL replied that the scarring resembled that of tertiary syphilis rather than scarlet fever, but the mother's statement was quite definite that it had resulted from scarlet fever.

## A MAN, AGED FORTY-SIX, WITH RODENT ULCER OF THE FLOOR OF THE NASAL VESTIBULE.

BY DR. WILLIAM HILL.

HE intended to have recourse to radium or X-ray treatment, but before doing so thought of removing the redundant tissue first of all, unless such a step was held to be inadvisable.

THE PRESIDENT commented on the shortness of the duration as unusual in rodent ulcer.

MR. SCANES SPICER had seen a similar case some years ago, in which Mr. Jackson Clarke, then Pathologist at St. Mary's Hospital, had found psorosperms. The disease, which was not rodent ulcer, was removed three times, but the patient ultimately died. He asked Dr. Hill to submit his specimen to Mr. Jackson Clarke.

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ROYAL SOCIETY OF MEDICINE—OTOLOGICAL  
SECTION.

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*Saturday, May 8, 1909.*

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*President, DR. PETER MCBRIDE, in the Chair.*

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*Abstract report of proceedings by DR. DAN MCKENZIE.*

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The following cases and specimens were shown :

A SPECIMEN OF CARIES OF THE TEMPORAL BONE IN WHICH THE DESTRUCTION OF THE BONE CLOSELY SIMULATED THE APPEARANCE SEEN AFTER THE PERFORMANCE OF THE RADICAL MASTOID OPERATION.

BY MR. A. L. WHITEHEAD.

DR. DUNDAS GRANT said he had seen the condition in several instances, and in each case it was due to the development of cholesteatoma, which had caused the erosion of bone, almost exactly like the present case.

MR. A. CHEATLE said he did not think such cases were very rare.

MR. WHITEHEAD replied that there was chronic otorrhœa on both sides, and that the patient had died of meningitis, due to infection from the other side. It was in the most extreme form he had ever seen, the whole bridge being absolutely destroyed.

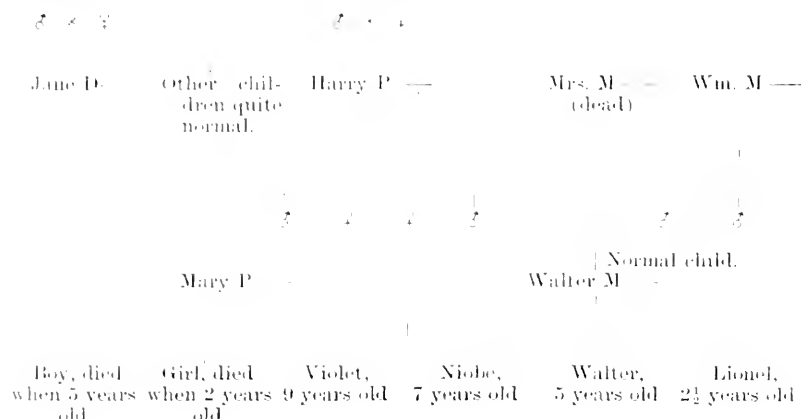
CASES OF DEAF-MUTISM.

BY MR. W. H. BOWEN.

Two children, Niobe M—, aged seven, and Walter M—, aged five, were brought to the Royal Ear Hospital on March 2, 1909, to be examined with a view to remedying the deafness present. They were found to be absolutely deaf and quite unresponsive to any sound. No cause for this deafness was found, and no history of disease in the past was ascertainable. The external ears, meatus, and membranæ tympani were normal. The children were sensible, clean, and apparently healthy in all other respects. They had no signs of congenital syphilis. The mother, who brought them from Wilts, stated that her eldest boy, who died from an epidemic fever when five years old, was also entirely deaf, and was stated to be incurably so when seen at the Royal Ear Hospital at the age of three. She stated that her husband was a strong, healthy man, that she herself never suffered from illness, that she never had a miscarriage, and that in the family, where the matter



had been discussed, the occurrence of the deafness was inexplicable. The father and mother were in no way related.



Dr. DUNDAS GRANT said it seemed that the cases were congenital, and it would be interesting to hear if there was any evidence of failure of development of the equilibrical portion of the labyrinth at the same time. In cases of deaf-mutism it was important to make the tests by rotation at all events, syringing also if desired, to see whether the vestibular portion was functionally active or not.

Dr. DAN MCKENZIE said the vestibular reaction in deaf-mutism had been dealt with by a German writer about eighteen months ago—Brock—and a *resumé* of his work appeared in the JOURNAL OF LARYNGOL., RHINOL., AND OTOL.,<sup>1</sup> a year ago, dealing with equilibration and the vestibular sense tests in deaf-mutism; and Mr. A. R. Tweedie had also made investigations in the subject.<sup>2</sup>

Mr. MACLEOD YEARSLEY thought that the interest of the case was that three such instances occurred in the family, without any previous history of any kind. He asked whether Mr. Bowen inquired about tubercle, insanity, and alcoholism in the histories.

Mr. FITZGERALD POWELL said it would be interesting to learn the family histories further back—those of grandfather and grandmother and the collateral members.

Dr. W. MILLIGAN asked what district the children came from when young, and whether there was an epidemic of cerebro-spinal meningitis there.

Mr. A. CHEATLE did not think that the absence of a family history in this case proved it was not the congenital form. Dr. Kerr Love, in his book, had shown that several generations might be skipped, and in that case the connection became almost impossible to trace. Such cases looked like congenital malformations, but there were usually some gaps in the hearing.

Mr. BOWEN replied that he did not test the patients for vestibular conditions. The mother was a very intelligent woman, and was quite sure there had been no previous illness. A little boy died at five years of age from scarlet fever. He did not see where such a case could be

<sup>1</sup> JOURNAL OF LARYNGOL., RHINOL., AND OTOL., vol. xii, 1907, p. 658.

<sup>2</sup> *Ibid.*, vol. xiii, 1908, p. 592.

classified on the Mendelian basis. It was almost unknown for the abnormality to skip more than two generations. He had inquired as far as the great-grandfather of one branch and the grandparents of the other, and there was no history of deaf-mutism. The occurrence of deaf-mutism in families had been dealt with by Professor Karl Pearson and Dr. Jobson Horne, and they showed that whenever a normal person was born in the family he handed on the normal inheritance. The occurrence of spontaneous deaf-mutism in a family was nearly always related to insanity. But in the present case no trace of insanity could be found, and the aetiology was, to him, inexplicable.

NOTES OF A CASE OF CHOLESTEATOMA OF EXTERNAL AUDITORY  
MEATUS TREATED BY LOCAL APPLICATION OF EUZYMOL.

BY DR. ADOLPH BRONNER.

The patient, a very nervous girl, aged ten, had been deaf, with repeated attacks of earache for about two years. Both meatuses were full of *debris*. After prolonged syringing a large cholesteatoma was removed from right meatus. The use of peroxide of hydrogen drops greatly facilitated the removal. The child refused to have the left ear syringed. Euzymol drops (1-3) were used for fourteen days, and much *debris* came away. When seen again the left meatus was open and the drum could be seen.

DR. DUNDAS GRANT asked what euzymol was, and whether the drum when seen was absolutely normal, because cholesteatoma of the external auditory meatus was a continuation from the external attic or some other cavity of the middle ear. He congratulated the child upon its refusal to have the left ear syringed. Patients often experienced great pain through syringing, either on the part of specialists or non-specialists, in cases of cholesteatoma when it was treated as if it was impacted cerumen.

DR. BRONNER, in reply, said that the child was very delicate and had heart disease, and for that reason chloroform was not given. The drum could be seen. It was cholesteatoma of the external meatus, a condition which was not very uncommon. Euzymol was an American preparation, issued by Fairchild, but he did not know its composition. He had used it in chronic eczema of the external meatus, where there was necrosis of tissues, and in the present case it had seemed to be very useful.

PATIENT WITH PROTRUSION OF SYNOVIAL MEMBRANE THROUGH  
TYMPANIC PLATE AND BENEATH SKIN OF EXTERNAL AUDITORY  
MEATUS.

BY MR. RICHARD LAKE.

The patient presented himself complaining of deafness and of a peculiar sound as of moving fluid when eating. On examination one found on the lower and inner aspect of the anterior wall a small prominence, white and lenticular in shape, having more the

appearance of an exostosis, but on investigation it was found to be soft, and, suspecting its origin, the patient was made to open and close the jaws whilst the swelling disappeared and reappeared. The cyst is now less tense than formerly.

(A preparation was shown illustrating dehiscence in external meatus.)

The PRESIDENT said he had never seen anything like this before.

Dr. H. J. DAVIS said that when the patient was asked to inflate his own ears he made the balloon which members saw. He thought the condition must be connected with the middle ear, otherwise he did not see why it should not move.

Mr. WEST said the only condition he had seen simulating the present one was the appearance of the synovial membrane after the removal of the anterior wall of the bony meatus.

Mr. YEARSLEY said the case added one more to the causes of tinnitus.

Mr. WHITEHEAD said he could not satisfy himself that it moved on inflation.

Mr. TILLEY said he thought the explanation of the apparent movement on inflation was that the average patient closed his jaw tightly as he blew out, and so in this patient the projection appeared at that moment in the meatus.

Mr. A. CHEATLE said the projection could be closed by pressure on the jaw.

Dr. FITZGERALD POWELL asked whether Mr. Lake had seen the condyle of the jaw from which the specimen was taken, and whether there was any alteration in the shape of the condyle, as that might account for the dehiscence in the posterior wall.

Mr. LAKE replied that when the man came he obviously had arthritis, and for that reason the cyst was then more tense. He did not remember how he had obtained this particular temporal bone, nor what the shape of the condyle of the jaw was like.

#### CASE OF EPILEPTIFORM ATTACKS OF LABYRINTHINE ORIGIN.

By Mr. LAKE.

The patient, female, aged thirty-eight, had suffered from O.M.S. after scarlet fever in infancy. No discharge now, but deafness with tinnitus persisted bilateral. Vertigo occurred when she stooped and was particularly well marked when either ear was syringed; objects (usually) appeared to move towards the left. Attacks occur without direct stimulation. Both membranes are perforated, left almost destroyed. Paracasis Willisii noticed.

The patient gave the following account of the attacks: They commenced with a feeling of nausea in the epigastrium which extended up to the head, and vertigo set in; at about the same time she lost vision as to external objects, but experienced flashes of light, and became partially unconscious although she knew

what was taking place around her. She was much fatigued for the remainder of the day.

Dr. DUNDAS GRANT said he had a case which very much resembled the present one, in which cholesteatoma was certainly present. The fits entirely ceased upon the removal of the ossicles, as that allowed of the escape of the *debris*.

Dr. WESTMACOTT asked whether the attacks occurred at any particular time. He also had had a case in which the condition cleared up after removing carious ossicles. The patient had epileptiform convulsions at night for eighteen months after the operation. Then the condition healed up and the congestion disappeared. The patient had since been passed as a first-class life.

The PRESIDENT asked whether hysteria had been absolutely excluded in the case. When a lesion was present in a hysterical patient there was difficulty in deciding whether the attacks were primarily due to the hysteria or to some aural lesion.

Mr. LAKE replied that he only brought forward this as an example of a large group of cases which had been described by Sir William Gowers some time ago under the title "aural epilepsy," and he looked upon them as epileptic fits with auditory auræ. Mr. Lake brought forward the present case to show that it was sometimes the ears which were at fault. The attacks which followed disturbance of the membrane were epileptiform and not epileptic. He could not prove his contention, except that by syringing out the ear with cold water he could reproduce such excessively severe symptoms with nystagmus that the patient fell down. He did not say it was not hysteria, but it did not strike him as being such. He believed it was to be explained by the pathological condition of the labyrinth, and seemed to be another illustration of Sir William Gowers' interesting series of cases.

#### INTRACTABLE ULCER OF TRAGUS AND FISTULA OF HELIX.

By Dr. W. H. KELSON.

A girl, aged six. Her mother said she did not notice anything wrong at birth nor up to a year ago, but then a pimple appeared in front of the left ear, which festered and discharged yellowish matter and had never completely healed, though scraped and cauterised by a surgeon. On examination an ulcer the size of a threepenny-bit was found involving the left tragus and extending forward from it and covered with a yellowish crust. There was no history or evidence of discharge from the meatus.

Dr. H. J. DAVIS suggested that it might be a case of lupus.

Mr. A. CHEATLE said that twelve years ago he had published a similar case in the "Archives of Otolaryngology." The abscess burst and took a long time to heal up. In another case under his care it proved to be a congenital aural fistula, which he had to dissect out before it healed perfectly.

Dr. FITZGERALD POWELL said he had had a case in a child with a similar ulcer, and also a sinus. He dissected the ulcer out, and tried to destroy the sinus; as a result the wound healed over for a short time,

but burst out again. He followed up the sinus and dissected out its wall, and again it got well, apparently. The patient then went home for three and a half years and came back again, for again the sinus had broken out. It was finally treated with tuberculin injection and healed up. That was a year ago, and he had not seen the child since, so he presumed that it had remained well so far.

Dr. KELSON, in reply, said he brought the case forward because he suspected it was not quite simple. At first he had suspected lupus or tubercle, but on passing a probe he found it definitely connected with a fistula in the helix. Besides the secretion much honey-like substance could be pressed out of the sinus like what one found in congenital fistula. Possibly it might be tuberculous, but the simpler explanation seemed to suffice.

#### FURTHER NOTES ON TWO CASES OF CARCINOMA OF THE EAR.

By MR. C. E. WEST.

Both these cases were included in the short summary recently published in the report of the February meeting of the Otological Section. Since that date fresh developments had occurred.

CASE 1.—S. S——, male, aged forty-five, June, 1907, came to the hospital with history of pain in left ear for at least two years; lately slight bleeding. Carcinoma involving all walls of the meatus in the bony part; no glandular enlargement observed. At operation the tympanum was apparently free from disease. Radical mastoid operation; complete excision of the meatus, cartilaginous and bony; removal of tympanic plate made as complete as possible.

All apparently well till March 24, when discharge was complained of. In the anterior part of the cavity there was a fulness, from a minute opening in which serous fluid, mixed with epithelial *débris*, could be squeezed; no surface ulceration. The opening led into a considerable mass of easily penetrated tissue, a piece of which, on removal and examination, proved to be squamous-celled carcinoma. At a further operation there was found extensive growth passing forward deep to the neck of the lower jaw into the internal maxillary region, along the line of the Eustachian tube to the neighbourhood of the lateral wall of the pharynx and upwards through the bone (?), the root of the greater wing of the sphenoid, and the dura mater, into the brain. Its removal was necessarily abandoned as impossible.

CASE 2.—W. E——, male, aged sixty-eight. Operation, October, 1908. Carcinoma involved the right external meatus, the parotid gland, and masseter muscle. Extensive enlargement of cervical glands; irremovable mass in the right side of the root of the tongue. Local removal, to avoid ulceration, of the meatus, parotid, and masseter, together with the proximal lymphatic glands. Squamous-

celled carcinoma. This patient was shown at the February meeting.

There had been no local recurrence which could be observed, but recently there had developed an enormous number of subcutaneous nodules and masses, with some in the muscles; the largest are in the muscles of the left upper arm and left scapula. The glands in the neck have much diminished in size, and the tongue is more freely movable; owing to the limitation of movement of the jaw it is impossible to examine accurately the root of the tongue, but from the absence of pain it is probable that there is no ulceration. When last seen this patient's condition was very bad, very feeble and anæmic, but free from pain except in one of the masses which appeared to be affecting the periosteum of the left humerus.

(Photographs of the patient were shown.)

The PRESIDENT said if there was an absence of discussion on the cases it was simply because the condition was so rare, but he was only expressing the feeling of the Section when he thanked Mr. West for having brought them forward. Such cases could not too often be brought before their notice.

Dr. BRONNER said he did not doubt that these cases were carcinoma, but some time ago he had a case which showed the typical symptoms of epithelioma of the external meatus, and an expert microscopist declared it to be such. He told the man he ought to have it operated upon. A few days later the patient got pustular eczema all over his body, and the meatal tumour disappeared absolutely. Some of the cases published as cured epitheliomata were not that disease at all.

Mr. WEST, in reply, said he ought to apologise to the meeting for bringing the cases forward, but important happenings had occurred which made it imperative that he should publish the additional facts. In the note at the time of the original operation it was stated that there was a pale isolated form of granulation at the mouth of the Eustachian orifice. Seeing how the disease had extended since then, he thought that this must have been malignant tissue, though at the time it was thought not to be so. The point was thus raised, What was the direction of flow of the lymphatics of the mucosa of the tympanum? He would be glad if anyone could tell him whether they drained along the origin of the Eustachian tube towards the pharynx. If so, it meant an extension of the operative sphere in cases of carcinoma of the ear. In one of the cases shown he had scraped away as much as he could and grafted the cavity, and the grafts took very well. But since then an increased fulness in the depth of the cavity had appeared, and there was extension going on underneath the skin. The patient was now dying of the symptoms of cerebral compression, and he thought there was a large mass in the brain and in the temporo-sphenoidal lobe. There was loss of memory, he had difficulty in finding words, and he had intermittent coma. That man's condition, when he came back, was exactly what was usually described as squamous carcinoma of the *tympanum*. When he first saw the patient there was no doubt it was carcinoma of the *meatus*. This history illustrated the fact that the majority of the cases started in the meatus, and that they seemed to be commoner than he had thought. In

the second case the only point of interest was the extreme rarity of the dissemination of squamous-celled carcinoma in the subcutaneous tissues. The authorities he had consulted seemed to regard this mode of dissemination as practically unique.

A YOUNG MAN, AGED THIRTY-FIVE, WITH EPITHELIOMA OF MIDDLE EAR; OPERATION; RECURRENCE THREE MONTHS LATER; SECOND OPERATION AND X-RAY TREATMENT. DERMATITIS, FACIAL PARALYSIS AND INVOLVEMENT OF PAROTID (PHOTOGRAPHS ALSO SHOWN).

BY DR. H. J. DAVIS.

The patient was first seen in October, 1908, by Mr. Lake, who diagnosed the condition. As his own beds were full he asked Dr. Davis to take him into the West London Hospital. History very short. Three months' intense pain in left ear; no history of a blow; a small granulating polypus was protruding at the meatus. This, in addition to some parotid swelling, was the only indication of the disease. No glands.

On November 11 Dr. Davis dissected the auricle forwards, excised the meatus and concha, and removed the whole of the contents of the middle ear, which was eroded down to the internal carotid, which could be seen (and could still be seen) pulsating at the bottom of the wound. The disease proved extensive. The post-aural wound healed rapidly and the deeper parts granulated; all pain ceased. Patient left the hospital with instructions to report himself once a fortnight. This he failed to do, "as he was quite well."

Three months later he returned with a recurrent growth. The parts were freely curetted and cauterised with Paquelin cautery, and ten days later he was sent to the X-ray department for treatment. In a month he developed dermatitis. The treatment was discontinued and the disease rapidly returned. The cavity, a large one, was again curetted, the masses of growth removed being enormous. The patient was now emaciating, the parotid was involved, and the left facial nerve was paralysed. He was, however, free of pain, and X-ray treatment has been again renewed with a small focussing tube passed into the wound. Discharge of parotid fluid seemed the only inconvenience. The cavity through the ear, when at meals, was lightly plugged with gauze. The youth of the patient and the virulent malignancy of the growth, together with the rarity of the disease, were of interest.

(Photographs of the ear before and after operation were shown.)

The PRESIDENT said that not the least interesting feature was the enormous extent of the operation cavity.

Mr. WEST said he had been much struck by the condition of the cavity, and by its similarity to his own first case after the first operation. The growth extended in the same direction, and if one curetted firmly in the present case he thought the growth would be found to extend nearly to the pharynx, and forward into the zygomatic fossa. He expected it went up to the brain also. It was a hopeless case with regard to operation.

Dr. DAVIS, in reply, said he thought the case bore out Mr. West's idea, that the growth had probably started in the meatus, and had spread backwards. The X-rays had had some retarding influence on the growth, for after the rays had been left off it began to recur. The external carotid artery had been exposed five months, and it could be seen pulsating. It was surprising that it had not yet ruptured, but probably it would do so.

NOTES OF A CASE OF LEFT TEMPORO-SPHENOIDAL ABSCESS OF OTITIC ORIGIN; OPERATION; ABSCESS EVACUATED; SECONDARY HÆMORRHAGE ARRESTED; LEFT BASAL SUPPURATIVE MENINGITIS; DEATH.

By DR. H. J. DAVIS.

The patient was a powerful man, aged twenty-four. He was brought to the West London Hospital by two policemen on the evening of April 15. They stated that he "was staggering about the street and spinning round, and they thought that he had taken poison." There was no evidence of this, and as the patient "seemed to have earache" Dr. Davis was asked to see him. He was sitting in the casualty department holding his head and crying childishly, and evidently in intense pain. Cerebration slow; he was very giddy, with "rushing noises in the head," and he then stated that he had had earache for several days but no discharge, and never had earache before. The left meatus was tightly plugged with cerumen and there were no localising signs whatever. On extracting the cerumen with difficulty caseous matter was detected; pulse 100; temperature 104° F. Radical mastoid operation forthwith. Middle ear and antrum, a mere slit, were full of pus; mastoid sclerosed. The tegmen was eroded and an extra-dural abscess evacuated; this was quite local. Bone removed over considerable area; brain not pulsating. Dura opened and brain incised; gush of fluid but no pus; brain then pulsated freely. Gauze drain; wound left open, dura stitched. Temperature fell to normal and patient quite



rational though irritable; he was very hungry. Five days after this temperature rose and patient was sick for the first and only time, very noisy, and "banging his head about the bed"; twitching of face, and both legs drawn up; no optic neuritis.\* Second operation a large flap turned down and bone removed anteriorly; a temporo-sphenoidal abscess was evacuated. The abscess was at the tip of the lobe, and apparently in no way connected with the original site of the antral disease.

The patient improved very much and seemed to be doing well, but thirty-six hours later the dressings and pillow were soaked with blood, and arterial blood was found to be streaming from the wound. Under continual irrigation the bleeding points were detected and secured, the tissue round the abscess being soft and necrotic. The hemorrhage came from large cortical vessels and was profuse. Pulse on returning to the ward was 124, and temperature 101° F. Rectal saline of a pint with adrenalin was given and the patient recovered, but he was very noisy and it took three men to restrain him; he kept standing up in bed and shouting, and there were certainly no signs of asphasia.

Next day patient became suddenly drowsy with symptoms of basal meningitis; left pupil dilated, right pin-point; eyes deviated to the left with spontaneous nystagmus to same side; neck rigid. Patient gradually sank and died ten days after admission.

*Post-mortem*.—Left cerebral hemisphere intensely congested; right normal tissue round abscess cavity almost fluid, the rest firm. The abscess was superficial and extended almost to the tip of the lobe. Dura mater over antral area firm and adherent to the brain. Posterior fossa: pus oozing from internal auditory meatus; no abscess in cerebellum; but in left posterior fossa dura adherent and suppurative meningitis. This evidently spread through the labyrinth; sinuses free; no thrombi.

The interest in the case lay in the facts that—(1) there was no history of old ear affection at any time; (2) the meatus was tightly plugged with cerumen, which probably cost the patient his life, allowing no exit to the pus at the onset of the disease; (3) pus in the antrum retained under pressure gave rise to three different centres of infection: an extra-dural abscess over the seat of disease; a temporo-sphenoidal abscess apparently unconnected with petrous bone; and later, a purulent posterior basal meningitis limited to one side. Symptoms only noticed twelve hours before death; (4) there were no localising signs whatever till the day the patient died.

(Specimen of temporal and part of occipital bone of the above case was shown.)

The PRESIDENT said one of the interesting features seemed to be the forced movements which were observed. He believed they were described as spinning-round movements. Presumably they were labyrinthine, as the lesion was not in the cerebellum.

Mr. WHITEHEAD said the note stated that the temporo-sphenoidal abscess was apparently unconnected with the petrous bone. He supposed Dr. Davis had no reason to think that it was an isolated abscess.

Dr. DAVIS, in reply, said that nothing could be seen when the patient first came up. He was given some drops of bicarbonate of soda to put in the ear and sent out. He was brought back by the police, as he was found staggering about the streets, so that the police felt sure he must have taken poison. Regarding the temporo-sphenoidal abscess being isolated, what he meant was that there was no pedicle connecting it with extra-dural abscess, and there was nothing to suppose the patient had anything beyond his original trouble. It was almost impossible to stop the hæmorrhage after the operation, as it seemed to come from the deep vessels in the brain. The disease had spread through the labyrinth into the posterior fossa, and the patient had died of suppurative meningitis, though no signs of that disease were obvious when first he presented himself.

#### EPITHELIOMA OF THE MASTOID PROCESS INVOLVING THE AURICLE.

By MR. HUNTER TOD.

Eight years previously a small warty growth was first noticed over the mastoid region. This was excised by his medical man; healing taking place immediately. Two years ago further nodules appeared over the scar-tissue; they gradually increased in size and coalesced, forming an ulcer. During the past six months the condition had been treated as an abscess, and fomentations were applied. Owing to the pain and owing to the auricle becoming œdematous, the patient was sent to the London Hospital. A typical epitheliomatous ulcer about as large as a half-crown was situated behind the ear and over the mastoid process; there was considerable œdema of the surrounding tissues, and the auricle, which projected markedly outwards, was very thick and hard to the touch, and gave one the impression that there was lymphatic obstruction. There was also a subcutaneous nodular mass occupying the region of the anti-tragus. The external auditory canal and drum were normal. One or two small glands could be felt above the clavicle in the posterior triangle of the neck.

The patient was taken into the hospital and the auricle and growth excised. The bone over the mastoid process was not affected. There was, however, considerable infiltration of the tissues in the pre-auricular region, so that part of the parotid gland

was also removed. Owing to the foulness of the ulcer it was considered advisable to wait a few days before removing the glands in the neck.

Mr. West said it seemed to be a squamous epithelioma of the scalp, extending forward and involving the pinna, rather than a carcinoma of the ear. It seemed to have started in the skin behind the ear. He thought complete removal of the glands in the neck would give the patient a fair chance of cure, and he urged that the operation should be carried out before the case became quite hopeless.

Mr. Ton, in reply, said he agreed that the disease had begun over the mastoid region, although now the lobule was involved. The man would be operated upon, and the reason the glands were not removed at once was that they had been so very septic.

BRAIN AND MEMBRANES FROM A WOMAN, AGED FIFTY, SHOWING ACUTE  
MENINGITIS AND ABSCESS IN THE LEFT TEMPORO-SPHENOIDAL  
LOBE.

BY DR. KELSON.

The patient came into hospital in a delirious condition, and became comatose. She had suffered for many years from suppurative disease of the left middle ear, left antrum, and frontal sinus. At the operation an abscess was found containing a tablespoonful of pus in the left temporo-sphenoidal lobe; the lateral sinus was not affected. Death took place a few hours afterwards. At the *post-mortem* no other abscess could be found in the brain.

PROCEEDINGS OF THE ROYAL SOCIETY OF  
MEDICINE—DERMATOLOGICAL SECTION.

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DR. RADCLIFFE-CROCKER, *President, in the Chair.*

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*Abstract Report by* DR. DAN MCKENZIE.

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LECTURE ON RADIUM THERAPEUTICS.

BY DR. LOUIS WICKHAM (PARIS).

The early investigations of the action of radium on human tissues showed that the element produced a decided inflammatory reaction on the parts exposed to its influence, and it was expected that this action would prove of therapeutic value. Experience

bore out the expectation, and the lecturer demonstrated by a series of beautiful coloured photographs thrown on the screen the destructive action of radium upon pigmented moles, which disappear under its influence, leaving but little in the way of scars. The dose, however, in these early days was difficult to regulate, chiefly because all the rays emanating from the element were permitted to act upon the skin exposed to it. From the therapeutic standpoint the most valuable action of radium is its selective quality, whereby it destroys disease-cells without harming the normal cellular constituents of the tissues. In order to explain what was meant by this selective action, the lecturer proceeded to describe the physics of radium. The radiations which emanate from radium are of three varieties, namely the  $\alpha$ -,  $\beta$ -, and  $\gamma$ -rays. The  $\alpha$ -rays are the least penetrating, and are easily absorbed. The  $\beta$ -rays are more resistant and reach farther, but as they are not all equally resistant they have been sub-divided into soft  $\beta$ -rays, middle  $\beta$ -rays, and hard  $\beta$ -rays, according to their penetrating powers. The last-named are the most persistent, and approximate in this respect to the most penetrating of all the radiations, the  $\gamma$ -rays, which are sometimes called *les rayonnements surpénétants*. The  $\alpha$ -, the soft and middle  $\beta$ -rays are irritating to the skin, but the hard  $\beta$ - and  $\gamma$ -rays are non-irritating, and as the former can be cut off by means of lead screens of various thicknesses, while the latter pass undisturbed through the screens, the modern apparatus for the application of radium unites the highest possible penetration with the least amount of irritation. Different applicators have been devised to meet different requirements. Some are tubular or cylindrical for insertion into fistulae or into the interior of tumours; others are flat and pliable, or flat and rigid for application to surfaces. The radium salt is melted in varnish, spread on the surface of the applicator, and exposed to a high temperature which renders the radium-containing varnish as hard as enamel. This may then be used naked, but it is better to cover it with rubber in order to conserve the varnish, and to provide it with the lead screens in order to cut off the superfluous and irritating emanations. Over the screens another covering of rubber and paper is placed in order to absorb the secondary rays which are generated by the passage of the hard rays through the metal screen. The elective (or selective) action of this radium apparatus is well exemplified in the case of a disease like eczema, where the skin, although in a very irritable condition, can be restored to a healthy state by

an exposure of from one to two minutes every three or four days. The lecturer then threw upon the screen a number of photographs illustrating the blandly curative action of the penetrating rays upon rodent ulcer, epithelioma of the skin, etc. A rodent ulcer affecting the nose was shown where a cure had been effected two and a half years ago without recurrence, and with practically no scarring. Another striking picture showed the total disappearance of an epithelioma of the auricle in which a surgeon to whom the case was exhibited after cure had been unable to say on what part of the auricle the cancer had had its seat. In a third instance of epithelioma of the skin over the mastoid region a similar disappearance without inflammatory reaction had been secured. In a fourth case an epitheliomatous growth close to the eye had retrogressed without any retraction of the eyelid. These cases, all of which were illustrated by projections on the screen, exemplified how the emanations destroyed the disease-tissue while sparing the healthy structures around.

The question which this property of radium raised was: Can the selective power be utilised in the treatment of deeper cancers without producing cutaneous inflammation? Experience showed that to a certain extent it could. In order to attack cancers situated under the skin a prolonged exposure was necessary, because the *rayonnements surpénétants* were few in number. Thus, in order to extract the maximum amount of effect from the infinitely small quantity of penetrating emanations exposures of from half to three hours, frequently repeated, were requisite. In subcutaneous cancers an apparatus of high penetrating power, provided with lead screens to shut off the softer rays, was applied to the part for five or six nights in succession in order to obtain an accumulation of the dose. Again a number of pictures were shown, illustrating the effect of radium upon subcutaneous cancer. One of these portrayed a case of epithelioma of the nasal mucosa which had grown out into the adjoining tissues of the cheek. The plan foreshadowed had been, first to treat the external and afterwards the intra-nasal portion of the growth, but when the external tumour had shrivelled up, it was discovered that the intra-nasal portion had also been destroyed by the passage of the rays through it from the outward application. In cancers of the lip, all of which did not, however, respond favourably to the treatment, the disease was exposed to a cross-fire (*feu croisé*) by means of the simultaneous application of radium to the two surfaces, inner and outer, of the epithelioma, a method which ensured the administra-

tion of a double dose. In a case of extensive sarcoma of the larynx, where a large mass of secondary gland deposits in the neck had seriously interfered with the patient's comfort, the glandular tumour was exposed to this "cross-fire" by applicators placed in front and behind the swelling, and a considerable reduction in the size of the mass with a corresponding improvement in the patient's condition ensued after fifteen nights' application. The disease in the larynx itself, however, had not been treated, and so had not undergone any improvement. Another case was described and illustrated in which there was a very large conical and malignant tumour of the cheek, a soft and rapidly growing epithelioma probably proceeding from the palatine region. The skin over the apex of the tumour had undergone ulceration, but elsewhere, though red and inflamed, it was intact. This mass was treated by the "cross-fire" method, the position of the radium applicators over the sound skin being changed each night so as to enlarge the area bombarded with emanations. Into the ulcer at the apex of the tumour an unprotected cylindrical applicator was introduced, because at this spot there was no danger of irritating the skin. The treatment was continued for fifteen days, interrupted for a time, and resumed again, and in a month the tumour had shrunk to one half its former size. An interesting illustration of the retrogression of the growth lay in the fact that while at the start the tumour could not be moved independent of the head of the patient, at the end of the month it had become freely movable as if the hard rays, penetrating to its roots, had loosened its connections with the deeper structures. From this experience it was argued that under certain conditions radium could render inoperable cancer operable.

In another case of epithelioma of the skin of the temple, near the eye and affecting the underlying bone, the treatment had brought about the destruction of the new growth, without, as had been feared, in any way damaging the retina.

Cancer of the mamma had also been successfully combated by the radium treatment.

Regarding visceral cancer, the lecturer expressed himself very cautiously, but ventured the opinion that by the radium method pain could be relieved, hæmorrhage lessened, and life prolonged.

The advantages of the treatment were summed up as follows: It was painless, and did not interfere with the patient's ordinary life; the skin was not exposed to an irritating or destructive

agent, and the resulting scarring was reduced to a minimum: it could be used after operation to prevent recurrence.

Finally, the lecturer uttered a note of warning against over-enthusiasm, and a readiness to accept as curative a method of treatment which was still in its infancy, and a method which necessitated special experience in order to regulate the dosage in such a way as to produce the full benefit without any prejudicial after-effects.

## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

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*Fourteenth Annual Meeting, held at Pittsburg, Pa., May 28, 29, and 30, 1908.*

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DR. EWING W. DAY, *President, in the Chair.*

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*(Continued from page 292.)*

### MALIGNANT DISEASE OF THE NOSE.

DR. EDGAR N. HOLMES, of Boston, reported a series of eleven cases of malignant growths in the nose, operated upon by him. The author grouped the cases reported in three classes. Of these two were attached to the septum, three to the middle turbinate, one to the extreme anterior end of the lower turbinate, three had their origin in the antrum of Highmore, two were so extensive when examined that their origin could not be determined. The pathologist had reported both septal cases as carcinoma, one of the turbinal cases as epithelioma, and the other two sarcoma; the lower turbinal case as epithelioma; the antral cases, one as carcinoma, another as enchondroma, and the third as carcinoma with areas resembling odontoma; the other two cases as adenoma and sarcoma.

### NEUROSES OF THE NOSE.

BY DR. CHARLES PREVOST GRAYSON (of Philadelphia).

Brief reference was made to "pollantin" as a "specific" for the treatment of hay fever. It was conceived in scientific spirit, the methods by which it was made were equally scientific, and the reasoning which led to its production was, so far as it went,

perfectly sound. But it went neither far enough nor deep enough. If it had it was highly probable that no claim of specific virtue would have been made for the remedy. If the aetiology of hay-fever comprised no more than two factors—a predisposing idiosyncrasy and an atmospheric excitant—there would have been nothing illogical in the expectation that pollantin might take its place beside the antitoxin of diphtheria, but its failure to bring about cure or very great improvement was not surprising when the existence and nature of the systemic condition which is more or less in evidence in every case was recognised. For many years he had believed that a fundamental disturbance of normal metabolism was responsible for the essential nervous element in the causation of hay-fever. So long as the blood-current was contaminated with a number of toxic materials so long would there be nerve centres that were poorly nourished, over-sensitive to disturbing influences, and of reduced power to neutralise the effects of such influences. In hay-fever the vaso-motor centres were earliest and most markedly affected, and when to this was added not only the idiosyncrasy but possibly also a precedent intra-nasal lesion, the speedy evolution of the symptom-complex of this disease followed the presence in the nostrils of pollen or other obnoxious material. Much light was thrown on the remote causation of this affection by the fact that it was essentially a disease of those who lead the strenuous rather than the simple life. The drug treatment of hay-fever was irrational and fallacious, nothing short of drastic and radical reform of the patient's personal hygiene being effective in the maintenance of a normal condition of the body. He believed, therefore, that in the gymnasium rather than the laboratory would be found the cure for the trouble.

Attention was directed to another nasal neurosis very closely allied to hay fever, "*rhinorrhœa spasmodica*" or "paroxysmal sneezing," which, pathologically, seemed to be hay fever minus the idiosyncrasy concerning external irritants. The disturbance of the vaso-motor equilibrium was the result, in most of these cases, of some accidental and transient stress of an emotional nature, and it was this which accounted for the absence of any periodicity in connection with repeated attacks of this disturbance. Three illustrative cases were detailed.

In conclusion the author referred to a third neurosis of the nose having its origin in disorderly sexual functions.

Dr. B. R. SHURLEY, of Detroit, Mich., had made an effort to determine how much of reflex disease of the nose could be referred



to a general neurosis. He had not been able to find a single instance of the ordinary reflex neuroses which was not accompanied by some other symptom of general neurosis. Innumerable symptoms were complained of by these patients, and while there was a method of treatment, each individual case must be studied. By the use of the valerianates, asafoetida, by dealing with the predominating neuroses, and by treating these patients as tuberculous individuals are treated in the early stages of the disease, the interval between the nerve storms could generally be lengthened.

Dr. LEWIS A. COFFIN, of New York City, asked what Dr. Grayson meant by nasal neuroses and reflexes, and where he considered the sensory nerve as having its origin. There seemed to be many things involved in this question of nasal neuroses not understood as yet. He did not agree with what had been said about the strenuous life in this connection, for children who had not become strenuous had hay fever, as had also boys who were athletic. He was thoroughly opposed to operating in the nose for this class of cases until a careful study of the case had been made.

Dr. J. A. STUCKY, of Lexington, Ky., remarked that the conditions under discussion were not seen in laboring men in the negroes of the south; nor in the classes referred to by Dr. Coffin, except in such individuals as were in the habit of taking large quantities of sweets and alcoholics. It was, in the majority of instances, a question of faulty intestinal metabolism. In over four hundred observations he had found an excess of indican, showing that the intestinal function was not properly exercised.

Dr. HENRY O. REIK, of Baltimore, Md., said that it mattered not whether pollantin ever relieved a case of hay-fever; the fact remained that Dunbar was the only man who ever approached the study of that disease in a scientific spirit, or offered a reasonable scientific theory to explain it.

#### REPORT OF A CASE OF PROBABLE PERSISTENT ANGIO-NEUROTIC (EDEMA OF THE LARYNX AND SOFT PALATE.

Dr. T. H. HALSTED, of Syracuse, N.Y., gave the further history of a case reported at the previous meeting. The case was that of a young woman with an obscure infiltration of the soft palate and larynx, the condition having been variously diagnosed as syphilis, tuberculosis, lupus, as the result of some undiscovered circulatory or lymphatic disturbance, or as related to some disturbance of one of the internal organs of secretion. The patient had first consulted

him in June, 1905, complaining of a thickness and fulness in the throat, dyspnoea on exertion, post-nasal and nasal discharge, excoriation of left nostril and frontal pain, these symptoms having followed a quinsy which occurred four months previously, and which had not cleared up after the abscess was opened. Examination at that time revealed a distinctly leathery, pale, swollen infiltration of the uvula and soft palate; epiglottis pinkish, œdematous; a pale œdematous, pyriform swelling of both arytenoids, partially obscuring the vocal cords, which were normal. In the nose there was crusting on the septal mucous membrane. General health good; no other symptoms than those mentioned. Numerous bacteriological tests proved negative, and the condition failed to yield to any form of specific treatment. During the past year there had been no change in the local condition of the uvula, soft palate, larynx or nose. Dyspnoea had not been so marked. During the year there had been five attacks of what the patient's physician had at first regarded as facial erysipelas, but which he now agreed with the author in believing to be angio-neurotic œdema. These attacks were characterised by the sudden appearance, without known cause, of great redness and swelling of the face, usually of one cheek, sometimes involving the dorsum of the nose and the lip. The attacks reached their height in from a few minutes to a few hours. Sometimes the temperature reached 104° F. Since the first facial attack some brawny, rather leathery swelling of the skin of the upper lip, right cheek, and the under lids of both eyes had persisted. This had led the author to believe that the so-called attacks had been but acute exacerbations of what he believed to be angio-neurotic œdema involving the face, the scene of activity having shifted from the pharynx and larynx to the skin of the face.

#### RHABDOMYOMA OF THE NOSE.

Dr. DERRICK T. VAIL, of Cincinnati, reported in detail a case of rhabdomyoma occurring in the nose, this being, so far as he had been able to ascertain, the only case on record. The growth completely filled the left naris, both anteriorly and posteriorly. The growth was removed piecemeal under local anaesthesia. Recurrence soon took place, and radical external operation was determined upon. The patient rallied from the operation so far as consciousness and respiration were concerned, but her heart failed, and she died sixty-eight hours later. Microscopic study of the tumour had been made, a detailed report of which was given.

Dr. JOHN J. KYLE, of Indianapolis, Ind., said the discussion of a tumour of this character involved a discussion of tumours in general in this region. One of the aetiological factors in the production of tumours of the nasal and accessory cavities was probably irritation, most commonly produced by acute catarrhal or acute purulent inflammation.

Dr. CHRISTIAN B. HOLMES, of Cincinnati, who had seen the case in consultation, agreed with Dr. Vail that removal of the tumour was the only proper course to be followed. The operation performed was in every way perfect, but the patient was in a desperate condition. He had never seen a similar case. With the Young inhaler, or the modified inhaler of Gwathmey, by plugging the posterior nares most of these cases could be operated upon successfully without tracheotomy.

## Abstracts.

### PHARYNX.

**Gillette, H. F.**—*Untoward Results from Diphtheria Antitoxin, with Special Reference to its Relation to Asthma.* "The Therapeutic Gazette" (Detroit), March 15, 1909.

The author concludes that all sera are still in the experimental stage of their usage, and that no one should be used without a well-defined object in view, and care as to the absence of contra-indications. A table is given of details of twenty-eight cases in which untoward results followed, and of which fifteen died. Symptoms come on usually within ten minutes of injection, and death, if it occurs, usually happens within one hour, and is due to respiratory failure. The author disclaims any alarmist intention.

MacLeod Yearsley.

**Kronenberg, E.** (Solingen).—*Passage of a piece of Tissue through the Eustachian Tube after Operation for Adenoid Growths.* "Zeitsch. f. Laryngol.," vol. i, Part IV.

In this paper is described a curious complication of the operation for removal of adenoid growths, of which there seems to have been no previous record in the literature. A child, aged six, suffered from a severe attack of scarlet fever, which was accompanied by bilateral otitis media. A considerable part of the tympanic membrane of both ears was destroyed. Six months later both ears were quite dry, but large perforations persisted. The pharyngeal tonsil was now removed as usual with Beckmann's curette; there was no vomiting. On the fifth day after the operation an examination of the ears revealed in the left tympanic cavity a mass of tissue about the size of half a pea, which was easily removed with forceps. Microscopic examination showed that this consisted of adenoid tissue. There had been no aural pain, and the tympanic cavity was only slightly injected.

Very few cases are on record in which foreign bodies have entered the tympanum through the Eustachian tube. Objects of any size which enter the tube are almost always expelled in a short time again into the naso-pharynx, often with great pain. The piece of tissue in this case measured in its largest diameter  $3\frac{1}{2}$  to 4 mm. It is remarkable that so large a mass should have passed the isthmus, which measures at most 3 mm.  $\times$  1.5 mm. Remarkable also is the fact that the mass remained for five days in the tympanum and yet gave rise to no symptoms and only slight inflammatory reaction.

Thomas Guthrie.

## NOSE.

**Schmidt** (Chur).—*Treatment of Acute Catarrh of the Nose and Pharynx.* "Münch. med. Woch.," December 29, 1908.

Preference is expressed for formalin preparations and oil of eucalyptus, the basis of the former being a preparation well impregnated with "chlormethylmenthyläther," known as forman. The plugging of the nose is unpleasant, and it is therefore recommended that a handkerchief should be sprinkled with fifteen to twenty drops of an emulsion of oil of eucalyptus and formalin, prepared by the "Wolo" Company in Zürich.

Dundas Grant.

**Löwy** (Carlsbad).—*The Treatment of Acute Coryza.* "Münch. med. Woch.," July 21, 1908.

A combination of menthol and camphor, 4 to 2, makes an oily fluid, of which a few drops are warmed in a test-tube containing a little water. The patient inhales the vapour twice or thrice daily for from five to ten minutes at a time. The remedies are believed to become sublimed on the surface of the respiratory tract. Among other aids is recommended diaphoresis by means of aspirin, also negative Politzer or Sonderman's suction.

Dundas Grant.

**Sargnon** (Lyons).—*Direct Endoscopy of the Maxillary Antrum through Fistulous Openings.* "Arch. Internat. de Laryngologie," etc., 1908, p. 705.

Sargnon has been able to secure valuable information from the direct inspection of the walls of the antrum by means of an endoscope, in shape like a very long ear-speculum, passed through alveolar or supra-alveolar fistulae. He reports: (a) that in dental cases the lining membrane of the cavity is smooth, yellowish, and not at all polypoid; on probing it bleeds but slightly or not at all; (b) in chronic cases the mucous membrane is markedly polypoid, red, thickened, and bleeds readily and freely; the cavity appears notably narrowed, and the mucous membrane is nowhere smooth and yellowish.

In one case he was able to locate a foreign body (drainage-tube) lying among the fungosities.

He suggests that the instrument might be passed through a nasal opening when the antrum has been opened by that route, but he has experienced considerable difficulty when trying to do so.

Finally, through this tube it is possible to remove a portion of the granulations for the pathologist when malignancy is suspected.

Dan McKenzie.

## LARYNX.

**Greene, D. Crosby.**—*Laryngotomy and Laryngectomy for Cancer, with Report of Four Cases.* "Boston Med. and Surg. Journ.," January 28, 1909.

After discussing the mortality of these cases up to and after 1888, the author ably discusses the preparation for the technique of the two operations. He gives short notes of four cases and emphasises the following details: (1) Careful selection of cases; (2) attention to oral cleanliness; (3) the avoidance of shock by (a) the use of atropine before operation, (b) the local use of cocaine during operation, and (c) the Trendelenberg position during the second stage; (4) the avoidance of inhalation pneumonia by (a) the Trendelenberg position during operation, and (b) rectal feeding and elevation of the foot of the bed after operation.

Marleod Yearsley.

**Schiffers, Prof. (Liège).**—*Troph-Edema of the Larynx.* "Archives Internationales de Laryngologie, d'Otologie, et de Rhinologie," September-October, 1908.

The patient, aged five, had cedema of the epiglottitis, the interior of the larynx being normal.

The father had suffered from alcoholism and syphilis, and the mother had been treated during her pregnancy for syphilis.

Treatment consisted in the external application of ice-bags, the local application of tinct. iodine, and after seven weeks resulted in cure.

The pathology of the case indicated a change in the nervous supply of the larynx, as there was no other local or general lesion to account for it.

Anthony McCall.

**Mouret, Jules (Montpellier).**—*A Note upon Thyrotomy for Cancer of the Vocal Cords.* "Revue Hebdomadaire de Laryngologie, d'Otologie, et de Rhinologie," October 17, 1908.

Two practical points in the technique of the operation are noted. In the first place it is advised, in dealing with the tumour, to separate all the soft tissues from the inner surface of the thyroid cartilage corresponding to the diseased side, and to include in the parts removed the ventricular band and the mucous lining of the ventricle. Hæmorrhage can be avoided by using the galvano-cautery in the final division.

Secondly, in cases where the thyroid cartilage is ossified and a small fracture occurs in dividing it, the operator may be tempted to leave the fractured portion *in situ*; but this generally leads to the formation of granulations inside the larynx until the fragment is thrown off. A better plan is to remove it at the time of the operation.

Chichele Nourse.

## EAR.

**Dench, E. B. (New York).**—*A Case of Acute Suppuration of the Labyrinth following Acute Otitis Media; Operation; Recovery.* "Annals of Otolaryngology and Rhinology," September, 1908.

The patient was aged sixty-five. Among other signs was bare, rough bone felt by the probe introduced through the tympanic perforation. Symptoms subsided, but the purulent discharge persisted, and at the end of a month the mastoid operation was performed. The discharge

then ceased for two weeks, but returned, and at the end of five weeks a severe attack of vertigo occurred with nausea, vomiting, tendency to fall towards the unaffected side, later nystagmus, especially on looking towards the healthy side. The symptoms gradually subsided, but at the end of another six weeks the discharge still persisted. The radical operation was carried out. There was an erosion in the external semi-circular canal which was then enlarged, turbid fluid escaping. The fenestra ovalis was then enlarged and a scale of bone from the promontory removed, the cochlea apparently containing granulation tissue. The dizziness rapidly disappeared and the patient recovered. The results of the hearing tests were interesting.

Two weeks after the vertiginous attack they were as follows:

Moderate whisper at 7 feet, tuning-fork on forehead better on affected side, bone-conduction diminished on both sides, upper tone-limit lowered to Galton 4.

One month after the attack and before the radical operation, moderate whisper at 5½ feet, bone-conduction equal on both sides, tuning-fork on forehead referred to the affected side, lower tone-limit raised to 512, upper tone-limit lowered to Galton 4.

After the operation, whisper at 6½ feet. Tuning-fork on forehead referred to diseased side, bone-conduction on diseased side slightly diminished, tone-limits 512 and Galton 4.

With labyrinthine symptoms the author considers it well to wait for an interval if there is little or no febrile movement, but in the presence of pronounced elevation of temperature operative interference should at once be instituted. [We presume hearing by the other ear was carefully excluded, and, such being the case, the amount of hearing preserved is remarkable.—D. G.]

*Dundas Grant.*

## REVIEWS.

*A Text-book of Diseases of the Ear.* By MACLEOD YEARSLEY, F.R.C.S.  
London: Kegan Paul, Trench, Trübner & Co., Ltd., 1908.

In his preface the author remarks that it has been his aim throughout his text-book to give as complete an account as possible of the various diseases and injuries to which the organ of hearing is liable, and in as concise a form as is compatible with clearness.

In our opinion he has succeeded admirably, and has placed before his readers with commendable judgment not only his own carefully considered views, but those also of many whose names are well known and highly appreciated in the rapidly growing domain of otology.

Following a capital summary devoted to the anatomy and physiology of the organ of hearing a chapter is devoted to "The Clinical Investigation of the Ear, Nose, and Naso-pharynx."

In dealing with tuning-fork tests we notice that Gardiner-Brown's tuning-fork is condemned, but that no reasons are given for the strong condemnation.

The author agrees with Lake's classification of tuning-fork tests, remarking, however, that it does not include the normal reaction, nor does it, in fact, include that somewhat common condition where Rinne is negative combined with normal bone and reduced aërial conduction.

In the chapter devoted to "Diseases of the External Ear" we think that more attention might with advantage have been paid to the pathology of the morbid conditions under consideration.

Diseases of the middle ear, both suppurative and non-suppurative, are discussed at considerable length, and much useful advice is tendered.

Labyrinthine suppuration is considered in the same chapter as diseases of the middle ear, an arrangement we think justified considering its pathogenesis. In some future edition of the book we think that the author would do well to amplify his description of the operative treatment of labyrinthine suppuration, and to define more explicitly the indications for operation.

In operating for cerebral abscess of otitic origin the author strongly recommends that in all cases the radical mastoid operation should be first performed, and the middle fossa opened through the same route by upward extension. While heartily agreeing with this recommendation, we think that in cases where the patient is *in extremis* it is justifiable to explore the brain at once, and later on, when the general condition has improved, to perform the complete post-aural operation. To reach a cerebellar abscess the author strongly advocates the route through the postero-internal antral wall, a route certainly justified by pathological findings. The indications for lumbar puncture are somewhat meagre, and we consider the length of the trochar advocated (p. 231) far too short.

Chapter X is devoted to a consideration of oto-sclerosis, and contains an admirable *resumé* of, and detailed references to, the literature of the subject. Unfortunately, however, the author is unable to suggest any new form of treatment of any real service.

One of the most striking and most useful chapters in the book is that devoted to "The Influence of General Diseases on the Ear," and is a veritable storehouse of information.

The author is to be congratulated upon the production of an eminently trustworthy and up-to-date text-book upon diseases of the ear. With few exceptions the illustrations are well done, although we think that some of the commoner instruments might with advantage have been omitted and others attributed to their designers.

In the production of the book the publishers have fully maintained their reputation.

W. Milligan.

*Manual of Diseases of the Ear, including those of the Nose and Throat, in Relation to the Ear.* By THOMAS BARR, M.D., and J. STODDART BARR, M.B., Fourth Edition. Glasgow: James Maclehose and Sons, 1909.

The third edition of Dr. Thomas Barr's well-known and highly appreciated "Manual of Diseases of the Ear" having long since been exhausted, we are glad to welcome the appearance of a fourth edition thoroughly revised and brought up to date.

In the volume before us Dr. Thomas Barr has had the able and willing assistance of his son, and a careful study of their joint manual will serve to further enhance their reputation as progressive and enlightened aurists.

The plan of the present edition follows closely upon that of its predecessors, with in addition the inclusion of various new operative procedures and therapeutic methods of treatment.

The various coloured illustrations are models of accuracy and of beauty, and should prove of great service to both students and practi-

tioners. Excellent articles upon general and local anæsthesia in operations upon the ear, nose, and throat have been added, special attention being directed to Neumann's method of producing local anæsthesia, which the authors have found of real service in such minor operations as the removal of polypi, excising the tympanic membrane, ossiculectomy, etc. Very full and detailed descriptions are given of the complete post-aural operation, the methods of grafting, etc. Diseases of the nose and throat in relation to the ear receive careful handling without unduly burdening the book. In any future edition we think that some space might with advantage be devoted to a description of the relation of accessory sinus suppuration to intra-tympanic pathological conditions, and also that the description of mastoid operations should follow, and not precede, the recital of the main symptoms of mastoid involvement.

The importance of labyrinthine suppuration is fully discussed and the modern methods of operation described.

In dealing with facial nerve anastomosis we would suggest a fuller, and if possible, an illustrated description of both facio-spinal and facio-hypoglossal anastomosis.

Intra-cranial suppuration is ably discussed and the value of lumbar puncture as a means of diagnosis emphasised.

In the operative treatment of meningitis we note no mention of West's recent method of trans-labyrinthine drainage. In the evacuation of cerebellar abscesses preference is given to the route through the postero-internal wall of the antrum, a method rapidly gaining in favour.

Oto-sclerosis is treated by the authors no longer as an interstitial inflammation of the middle ear as in former editions, but as a separate pathological entity—a primary inflammation of the bony capsule of the labyrinth.

We miss, however, any reference to the investigations of Albert Gray upon the pathogenesis of this curious and unfortunately, so far at any rate, intractable malady.

Many very useful formulæ are appended for the treatment of the more common diseases of the ear.

We venture to very cordially recommend the "Manual" and to congratulate the authors upon the result of their joint labours.

The general get-up of the book and the arrangement of the illustrations reflect the greatest credit upon the publishers.

W. Milligan.

#### BOOKS RECEIVED.

**Moritz, Schmidt.** *Die Krankheiten der oberen Luftwege aus der Praxis für die Praxis (Diseases of the Upper Air Passages, from Practice for Practice).* Fourth revised edition by Professor EDMUND MEYER, Berlin. 180 Figures in the Text, 1 Heliogravure, and 5 Coloured Plates. Berlin: Julius Springer. 1909.

**Ostmann, Dr. Paul.** *Lehrbuch der Ohrenheilkunde für Ärzte und Studierende (Text-Book of Otology for Practitioners and Students).* Leipzig: Vogel. 1909.

**Kopetzky, Samuel J., M.D.** *The Surgery of the Ear.* 63 Half-tone and Line Drawings, 8 Charts, and 4 Coloured Plates. New York: Rehnman. 1908.



# THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

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## NOTES UPON FOURTEEN CASES OF INTRA-CRANIAL DISEASE COMPLICATING MIDDLE-EAR SUPPURATION.

BY A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

*(Bring part of the Report for the year 1908 from the Ear and Throat Department of the Royal Infirmary, Edinburgh, under the Charge of Dr. A. Logan Turner.)*

*Frequency of Intra-cranial Complications.*—A study of the statistical tables at the end of the report reveals the fact that 532 cases of middle-ear suppuration were examined in the Department during the year 1908; of these, 129 were classified as acute and 403 as chronic cases. Intra-cranial complications occurred in fourteen of the patients, three, or 2·3 per cent., complicating acute, eleven, or 2·7 per cent., complicating chronic middle-ear suppuration.

The following conditions were met with: In nine cases only one complication occurred, namely, sigmoid sinus thrombosis in four, lepto-meningitis in four cases, and cerebellar abscess in one case. In the remaining five cases sinus thrombosis, along with lepto-meningitis, occurred in three, meningitis and temporo-sphenoidal abscess in one, and sinus thrombosis and cerebellar abscess in one. Thus sigmoid sinus thrombosis occurred eight times, lepto-meningitis eight times, cerebellar abscess in two cases, and temporo-sphenoidal abscess in one case. It would be obviously unfair to attach undue importance to the above percentages, partly because the severe type of case is naturally sent into hospital, and partly because the total number of cases of middle-ear suppuration examined is too small. Recent statistics on a much larger scale, dealing with

intra-cranial complications, have been published by Hegener in Heidelberg. During the decade 1897-1906, 10,187 cases of purulent middle-ear disease came under observation. Intra-cranial complications, *i. e.* brain abscess, sinus thrombosis, and lepto-meningitis, occurred in 82 cases, that is to say, in '8 per cent., or in rather more than  $\frac{1}{2}$  per cent. This figure represents much more accurately the probable percentage of grave complications which may arise in connection with middle-ear suppuration.

*Complications in Acute and Chronic Middle-ear Suppuration.*—It is a well-recognised fact, which our own figures support, that intra-cranial inflammation supervenes more frequently upon chronic than upon acute middle-ear disease. Thus, in the three cases complicating the latter sinus thrombosis occurred in two and meningitis in one case. In eleven cases complicating chronic middle-ear suppuration sinus thrombosis occurred in two, lepto-meningitis in three, and cerebellar abscess in one, while in three there was sinus thrombosis and meningitis, in one meningitis and temporo-sphenoidal abscess, and in one sinus thrombosis and cerebellar abscess. In the cases complicating acute ear disease only one intra-cranial complication occurred. Further, brain abscess was not met with as a complication of acute suppuration. In three cases of acute middle-ear suppuration, which were treated in the Department in 1907, lepto-meningitis occurred in one, sigmoid sinus thrombosis in one, and a temporo-sphenoidal abscess in one. In six cases, therefore, of acute ear disease only once was a localised brain abscess met with, so that it is evident that sinus thrombosis and meningitis complicate more frequently than abscess in acute middle-ear suppuration.

Grünert's figures show that, while 9 per cent. of the cases of brain abscess occur in acute, 91 per cent. occur in the course of chronic ear suppuration. Out of 2650 cases of acute ear disease collected by Jansen, a brain abscess was found in one, while in 2500 chronic cases abscess of the brain occurred six times. Heilmann has reported the occurrence of brain abscess in 20 per cent. of acute and in 80 per cent. of chronic cases.

*Relative Percentage of the Occurrence of the Different Complications.*—Jansen, in one series of cases, met with 35 cases of sinus thrombosis and five brain abscesses. Körner found in a series of 115 intra-cranial complications sinus phlebitis 41 times, uncomplicated meningitis 31 times, and brain abscess 43 times. Takabatake in 51 cases met with sinus thrombosis in 28, lepto-meningitis in 11, brain abscess in 4, and extra-dural abscess in 15 cases. Out of

9000 *post-mortem* examinations collected by Pitt, sinus thrombosis was present in 22, meningitis in 25, and brain abscess in 18. Gruber's figures are as follows: Sinus phlebitis in 84, meningitis in 71, and brain abscess in 45 cases. A summary of these figures, including the 14 cases in our own series, gives us—sinus thrombosis 218, lepto-meningitis 146, and brain abscess 118 times. Cerebral abscess is met with more frequently than cerebellar abscess, although Ballance has pointed out that the statistics of St. Thomas's and Great Ormond Street Hospitals show that abscess of aural origin is more frequent in the cerebellum than in the temporo-sphenoidal lobe. Körner makes the statement that temporo-sphenoidal abscess occurs twice as often as cerebellar, and in the recent statistics of Heimann we find that out of a total of 818 cases, 539 were cerebral and 279 cerebellar, showing a similar relation of 2 to 1.

*Relative Frequency in Relation to the Two Ears.*—Of the fourteen cases the complication arose in connection with the right ear in eight and with the left in six; whereas in 1907 the intra-cranial affection complicated the right ear in one and the left ear in eight. In the three cases in which an intra-cranial abscess occurred the left ear was the source of infection, and a similar relation existed in connection with the three intra-cranial abscesses operated upon in 1907. Of the eight cases of sigmoid sinus thrombosis, five were associated with the right and three with the left ear. Of the four cases of uncomplicated meningitis, three were complications of suppuration in the right and one of suppuration in the left ear. Of the eight cases of sinus thrombosis, the right sinus was affected rather more frequently than the left, in the proportion of 5 to 3. As a general rule the right sigmoid sinus is larger and placed further forwards than the left, and would on that account be more prone to infection. Arthur Cheate has pointed out, however, that no reliance can be placed upon this, as the sinus may sometimes lie far back on the right side and well forward on the left.

*The Sex and Age.*—Ten of the patients were males and four were females. Middle-ear suppuration occurs more frequently in the male than in the female sex, though there is little preponderance of the former over the latter in the following figures. Of the 532 cases of middle-ear suppuration examined, 294 were males and 238 were females. In 64 cases in which the mastoid operation was performed, 40 were males and 24 were females. The more serious type of case therefore occurred in the male sex. Körner found a

brain abscess in 61 men and 30 women; Hammerschlag, cerebral abscess in 122 men and 53 women; Okada, cerebellar abscess in 107 men and 36 women. Hessler has noted the occurrence of meningitis in 69 men and 38 women, while the same author has collected 266 cases of sigmoid sinus thrombosis occurring in men and 122 in women.

In regard to the age of the patients in whom intra-cranial mischief developed, we find that thirteen were affected in the early years of life, while one was a patient aged fifty. If the ages be expressed in decades they read as follows: One in the first decade, ten in the second decade, two in the third decade, and one between forty and fifty years. In other words, of the total of fourteen cases of intra-cranial affection, thirteen cases developed between the ages of ten and thirty years, and only one above that period.

*Duration of the Aurai Discharge.*—The duration of the discharge from the ear prior to the development of symptoms suggesting the onset of the intra-cranial condition was noted in each case. In the three cases complicating acute middle-ear suppuration the discharge was noticed for five or ten days in the two cases which developed sinus phlebitis, and for three weeks in the case of meningitis. In the eleven cases complicating chronic middle-ear suppuration, the duration of the aurai discharge varied from five to twenty-seven years. Thus, in two cases of uncomplicated sinus thrombosis it had lasted nine and fourteen years, in three cases of sinus thrombosis and meningitis five, thirteen, and fourteen years, and in one case of sinus thrombosis and cerebellar abscess fifteen years; in three cases of uncomplicated meningitis ten, sixteen, and eighteen years; in the case of meningitis and temporo-sphenoidal abscess twenty-seven years; and in the uncomplicated cerebellar abscess five years.

*Ophthalmoscopic Appearances.*—A summary of the ophthalmoscopic examination in the intra-cranial complications furnishes additional evidence of its negative character. In ten of the fourteen cases the eyes were examined. In the three cases of brain abscess, two cerebellar and one temporo-sphenoidal, there was no optic neuritis, and, indeed, no change was observed in the discs. Of the four cases of uncomplicated sinus thrombosis an examination was only made in one, and in it no changes were found. In two of the three cases of sinus thrombosis complicated with meningitis blurring of the discs was noted in one and a dilatation of the veins in the other, but in neither of them was there any optic neuritis. The third case was not examined. Of the four cases of uncompli-

ated meningitis there was blurring of the edges of the disc in two and a normal appearance in the remaining two. In none of them was there any optic neuritis. In no case in the series, therefore, was optic neuritis present. Changes in the disc are by no means of constant occurrence in connection with the development of intracranial affections complicating middle-ear suppuration. It is difficult to estimate the relative frequency of their occurrence. Without quoting the many observations which have been made on this point reference may be made to the statistics compiled by Hansen from Schwartz's clinic. Ninety-seven cases of intracranial complication of ear disease was observed. Of fourteen cases of lepto-meningitis examined the fundus was normal in six, there was hyperemia of the disc in four, and optic neuritis in four. In eight cases of uncomplicated sigmoid sinus thrombosis changes were observed in the optic nerve in three. In nineteen cases of brain abscess the vessels showed some alteration from the normal in two, while optic neuritis was present in six.

*Eight Cases of Sigmoid Sinus Thrombosis; Four Uncomplicated, Three Complicated with Lepto-meningitis, and One with Cerebellar Abscess.*—It is interesting to note in the first instance the pathological appearances which were found in the cases of sinus thrombosis at the time of operation. In the two cases which complicated acute middle-ear suppuration the mastoid cells were acutely inflamed and there was pus in the large cell at the tip of the process. In one of the cases the wall of the sinus was bathed in pus, but the dura mater forming the wall presented a perfectly healthy appearance to the naked eye. On incising the wall of the sinus free bleeding took place and no evidence of thrombosis was found. It was only when the bulb was exposed and opened that the situation of the clot was discovered. Notwithstanding the existence of a large "peri-sinus" abscess in this case it was evident that the infection of the vein had taken place directly from the middle-ear cavity into the jugular bulb. The organisms found in the clot were the *Staphylococcus albus*, *aurus*, and *citreus*, and the pseudo-diphtheria bacillus.

In the second case there was no "peri-sinus" abscess and the dura mater forming the wall of the vein was normal in appearance. The sinus contained a firm organising clot adherent to the inner surface of the wall extending from the bulb on the one hand to a point midway between the knee and the torcular on the other. The *Streptococcus pyogenus* was cultivated from the blood-clot along with a diplococcus resembling the *Micrococcus candidus*.

The remaining six cases were associated with chronic middle-ear suppuration, two of them being uncomplicated, while in three there was also lepto-meningitis, and in the fourth a cerebellar abscess. In the four complicated cases cholesteatoma was present. In five of the six cases there was a very foul "peri-sinus" abscess; in four the wall of the sinus presented a dark green gangrenous appearance, while in the remaining two it was covered with granulations; in one of the latter a probe passed without resistance through the granulations into the lumen of the sinus.

The condition found in the interior of the affected sinuses varied. A clot was present in the sigmoid sinus in all the six cases, generally speaking, occupying the lumen of the vessel from the bulb or close to it as far backwards as the knee, or slightly beyond it. The appearances varied in the different cases: in one the lumen was only partially obstructed, as bleeding readily occurred on incising the wall; in one the centre of the clot was suppurating; in one the contents of the vessels consisted of a foul coffee-coloured fluid; in one the clot almost entirely occluded the lumen, slight hæmorrhage, however, indicating that the thrombosis was not complete; in the two remaining cases the lumen was completely blocked by a dark-coloured clot. In only one of the series did the thrombosis extend into the internal jugular vein, and this was found to reach half-way down the neck; no organisms could be cultivated from the jugular clots; in this case there was foetid coffee-coloured fluid in the sigmoid sinus.

In one of the three cases complicated with lepto-meningitis the roof of the antrum was carious; after removal of the carious bone and enlargement of the opening thus made, a few drops of pus escaped from between the bone and the dura. In the two other cases no pathological changes were found there than those already described in connection with the sigmoid sinus. In the case complicated with cerebellar abscess the dura mater covering the cerebellum immediately posterior to the sinus presented a gangrenous appearance similar to that of the sinus wall, and a small abscess lying superficially, but in the brain substance, was discovered. There was no naked-eye evidence of labyrinthine suppuration in any of the four cases of sinus thrombosis complicated with meningitis and cerebellar abscess, and it was unfortunate that no *post-mortem* examination was obtained, thus making it impossible to trace the exact pathway of the meningeal infection.

In the six cases complicating chronic middle-ear suppuration the following facts in bacteriology were ascertained. In the two

uncomplicated cases the mastoid disease yielded a growth of the *Bacillus coli communis* in one and *Streptococcus pyogenes* and pseudo-diphtheria bacillus in the other. In neither of these cases were any organisms obtained from the sinus; in the first the hemorrhage was too free to permit of a swab being taken, and in the second the organising clot yielded no growth. In the three cases complicated with lepto-meningitis the mastoid gave in one the *Streptococcus pyogenes* and *Protens vulgaris*, the sinus the *Diplococcus pneumoniae*; in the second from the mastoid *Protens vulgaris* and *Diplococcus pneumoniae* were obtained, while the sinus gave a pure culture of *Protens vulgaris*. In this case a pure culture of *Protens vulgaris* was also obtained from the cerebro-spinal fluid. In the third case the *Staphylococcus albus* and *Streptococcus faecalis* were found in the mastoid, and a pure culture of *Staphylococcus albus* in the clot from the sinus. In the sixth case, where the sigmoid sinus thrombosis was complicated with cerebellar abscess, the *Staphylococcus albus* and *Streptococcus pyogenes* were obtained in the mastoid, and a pure culture of *Staphylococcus albus* was grown from the sinus.

It is not my intention to give a detailed account of the many interesting points connected with these cases, but merely to draw attention to one or two salient features. With one exception the leading symptoms, both in the uncomplicated cases and in those associated with lepto-meningitis and cerebellar abscess, were those usually recognised as significant of septic sinus thrombosis complicating middle-ear suppuration. One or more typical rigors with swinging temperature characterised each. In the exception referred to, the symptoms of meningitis predominated and masked those of the sinus affection. The patient had had no rigors or shivering; the headache was evidently intense and radiated all over the head upon the affected side; there was well-marked tenderness on percussion of the skull, head-retraction, and considerable turbidity of the cerebro-spinal fluid. In this case there was a "peri-sinus" abscess, the wall of the sinus was covered with granulations, and a clot partially filled its lumen. A pure culture of *Protens vulgaris* was obtained from the sinus and from the cerebro-spinal fluid.

The following case which complicated acute middle-ear suppuration may be briefly referred to on account of its somewhat undefined symptoms. The patient, a miner, aged thirty, in good health, developed an acute abscess in the right ear after bathing. Five days later he was admitted to hospital suffering from severe pain

in the ear, and with a history of having had a rigor immediately previous to his admission. The temperature was normal, the pulse 88; there was a profuse discharge from the right meatus, mastoid tenderness, and slight œdema just below the process. The mastoid cells when opened were found to be acutely inflamed, and there was pus in the cell at the tip of the mastoid. The wall of the sigmoid sinus presented a normal appearance. During the five days following the operation the patient was very comfortable: he had no further rigor or any feeling of chilliness, and the temperature remained normal. On the sixth day, however, he felt unwell and complained of pain and stiffness in the right side of the neck, pain in the lumbar region and in the lower limbs. The temperature rose to 103° F., the pulse was 112; there was no rigor or feeling of chilliness; the mastoid wound showed a healthy healing action. After discussing the propriety of opening the sinus it was decided to await further developments. The temperature with slight variations gradually fell to normal at the end of five days. During the next ten days, however, the temperature fluctuated from normal to 101-2° F., on one occasion again reaching 103° F.; the pulse varied from 76 to 96; the mastoid cavity was gradually filling up with healthy granulations, and the discharge from the meatus had almost ceased. It was not until twenty-two days after the first rigor that a slight but distinct second rigor occurred, the temperature rising to 101° F. The mastoid wound, which was now almost healed, was re-opened, and the wall of the sinus, being freely exposed, was incised. An organising partially adherent clot was found extending from the bulb to a point midway between the knee and the torcular. The internal jugular vein was ligated and divided, and its upper end anchored in the neck. The thrombus was removed and the bulb and vein syringed out. The *Streptococcus pyogenes* and the *Micrococcus candidus* were obtained from the clot. The patient made an uninterrupted recovery.

*Four Cases of Uncomplicated Lepto-Meningitis.*—In the one case associated with acute middle-ear suppuration, the incompleteness of the case record and the inability to obtain a *post-mortem* examination prevent us from giving a detailed description of the pathological conditions met with.

The three remaining cases occurred in the course of chronic middle-ear suppuration; cholesteatoma was present in two of them. The chief point of interest in these three cases centred in the fact that labyrinthine disease existed in each of them, and it was evident on *post-mortem examination* that the infection had spread



to the meninges by way of the labyrinth and the internal auditory meatus. In one there was no naked-eye evidence of involvement of the labyrinth during the performance of the mastoid operation, proof being only obtained by microscopical examination after the death of the patient. In this case, however, the posterior wall of the antrum was carious. In the remaining two, on the other hand, the labyrinth was opened on account of the appearances observed at the operation. In the one a small hole was visible in the external semi-circular canal; the stapes had disappeared and the probe could be passed through the oval window without opposition; inspissated secretion and granulation-tissue were obtained from the cavity of the vestibule. In the other case the external semi-circular canal presented a red discolouration and had a rough, uneven appearance; a small surgical probe was easily passed into it through a small aperture in its wall; the stapes was absent and granulation-tissue protruded through the oval window. Granulations were also found in the external canal: the bony wall of the aqueduct of Fallopius was also incomplete immediately above the oval window. In all of these cases the wall of the lateral sinus was of normal appearance.

In connection with the bacteriology of the three chronic cases no growth was obtained either from the mastoid or from the cerebro-spinal fluid during life; in one of them, at the *post-mortem* examination a diffuse basal meningitis was seen to extend over the surface of the medulla, pons and inter-peduncular space. In the second a pure culture of *Protus vulgaris* was obtained both from the mastoid and from the cerebro-spinal fluid. In the third the mastoid yielded a diplo-streptococcus, while a pure culture of pneumococcus was got from the cerebro-spinal fluid.

Of the eight cases in the series in which lepto-meningitis existed the labyrinth was definitely proved to be involved in four, in one microscopical examination of the inner ear clearly demonstrated that there was no evidence of labyrinthine suppuration, while in the remaining three we have no information regarding the condition of the inner ear.

Hinsberg has published statistics bearing upon this point in the *Zeitschrift für Ohrenheilkunde*, vol. lii. Of 198 cases of labyrinthine suppuration 104 were fatal, and of the latter 60 had lepto-meningitis. Boesch, in the same journal, vol. l, has demonstrated the path of infection from the labyrinth to the meninges in 65 cases, and found that in 49 per cent. the infection spread by way of the internal auditory meatus. I am indebted to Dr. J. S. Fraser for

the report upon the conditions of the labyrinth in three of my cases.

Special reference must be made to the occurrence of *Protens vulgaris* in some of the cases of intra-cranial complication. We have noted its occurrence in two of our cases of meningitis: in one case of sinus thrombosis complicated with lepto-meningitis it was found in the mastoid pus, and in the sinuss and cerebro-spinal fluid in pure culture; in the second case, one of uncomplicated lepto-meningitis, a pure culture of *Protens vulgaris* was obtained, both from the mastoid and from the cerebro-spinal fluid. Attention has been drawn by other writers to the presence of this organism in grave cases of middle-ear suppuration. Lanffs, in the *Archiv für Ohrenheilkunde*, vol. lxx, 1907, has collected from various sources twenty-one cases of complicated middle-ear disease, in which *Protens vulgaris* was cultivated either alone or in association with other organisms. In commenting upon the presence of this organism Lanffs points out that it is not in itself a source of danger, but that under certain conditions of the middle ear and mastoid cells it may threaten the life of the patient. He refers specially to the co-existence of cholesteatoma. In both of our cases cholesteatoma was present. His theory would appear to be that a decomposition of the cholesteatoma occurs in consequence of the presence of this organism, and the products of such decomposition are a source of danger. That the presence of cholesteatoma is in itself a danger is well known; this fact is illustrated in the cases recorded in this paper, as it was present in eight of the eleven cases of chronic middle-ear suppuration with intra-cranial complication.

Notwithstanding the grave and almost helpless nature of septic lepto-meningitis, operative interference was carried out in every case. The primary focus of infection was thoroughly removed by means of the radical mastoid operation, and if exposure of the wall of the labyrinth revealed the presence of purulent disease in the inner ear that cavity was also dealt with surgically. In none of the cases, however, was any attempt made to drain the area of the meninges in the immediate neighbourhood of the ear by way of the labyrinth and internal auditory meatus. Meningeal drainage, however, was practised by means of repeated lumbar puncture, and in one case additional drainage was attempted by opening the middle and posterior subarachnoid spaces. The following are the main points in connection with this case: K. L.—, aged seventeen, had had discharge from the right middle ear since infancy. Forty-

eight hours before admission she became ill with frontal headache, rise of temperature and shivering. On admission the headache was very severe, causing the patient to cry out at times, while in the intervals between the paroxysms she was distinctly drowsy. The temperature was 104.1 F. and the pulse 112. She lay curled up in bed upon her left side; there was photophobia, slight retraction of the head, and marked hypertonus of the muscles of the back. There was blurring of the margins of both discs. The cerebro-spinal fluid was under distinct pressure and turbid. *Proteus vulgaris* was afterwards obtained from it in pure culture.

A complete functional examination of the ear was rendered impossible owing to the patient's condition, but the whistle and spoken words were not heard by the right ear, and the tuning fork was lateralised to the sound side. There was no facial paralysis, and at no time had she suffered from vertigo.

A diagnosis of static meningitis was made and the complete mastoid operation was at once performed. The wall of the sigmoid sinus was healthy; the external semi-circular canal showed a fistulous opening; the oval window was patent. The canal and the vestibule were laid open and some inspissated secretion and granulation tissue removed, but no pus was found. Lumbar puncture was performed on each of the three days following operation, and became less turbid. The temperature fell two degrees, and there was no aggravation of the symptoms. On the sixth day after the operation the patient was again anaesthetised, and the roof of the tympanum and antrum and lower part of the squama were removed and the subarachnoid space opened and drained. The lower part of the cerebellar fossa was treated in a similar way, wire drains being inserted in both liberations. A lumbar puncture needle was inserted within the spinal theca and left there for nine hours. On the following morning the cerebro-spinal fluid was almost clear, the patient expressed herself as feeling better, the headache having almost disappeared, and the temperature fell to normal. The cerebro-spinal fluid showed only a scanty deposit of polymorphonuclear cells, and no organisms were grown from it upon inoculated media. The improvement was maintained for twenty hours, the temperature remaining normal, but at the end of that time the patient became suddenly unconscious and died. The *post-mortem* examination showed considerable oedema of the white matter of the brain, with congestion of the grey matter of the cortex and basal ganglia. The purulent lepto-meningitis was well marked in the interpeduncular space and extended laterally for some distance.

*Proteus vulgaris* was cultivated from the subarachnoid fluid after death. The marked improvement in the patient's condition after surgical treatment was a striking feature in the case, which was not in accordance with the conditions found at the *post-mortem*. Early and thorough treatment, however, in these cases should be attempted, and in the light of our knowledge of the frequency of the meningeal infection by way of the labyrinth, intra-cranial drainage should be carried out by that route. Since Macewen published the first successful case of meningitis due to middle-ear-suppurative other cases have been recorded, and notwithstanding the large mortality *early* operative interference is a legitimate procedure.

*A Case of Uncomplicated Cerebellar Abscess and a Case of Temporo-sphenoidal Abscess Complicated with Lepto-meningitis.*—In both cases the middle-ear suppuration was chronic. In the case of the cerebellar abscess cholesteatoma was found. The wall of the lateral sinus was healthy, as was also the dura mater of the middle fossa over the roof of the antrum and middle-ear cavity. The external semi-circular canal was intact, but had lost its healthy white appearance; the stapes was absent, and there was granulation-tissue in the oval window. No microscopical examination of the labyrinth has as yet been made. The cerebellar abscess was opened behind the sigmoid sinus and was found in the anterior part of the left lateral lobe. The patient died from septic meningitis between two and three months after the operation. No growth was obtained from the pus in the mastoid cavity; the cerebellar abscess contained a Gram-negative bacillus resembling the *Bacillus fusiformis*.

In the case of left temporo-sphenoidal abscess complicated with meningitis a small area of bone in the roof of the antrum had been destroyed, and granulation-tissue projected through it; on introducing a probe pus flowed out. After enlarging the opening in the bone a small hole was seen in the dura mater. The dura and cerebral cortex were incised, and a large abscess, containing an ounce and a half of very fœtid pus, was evacuated from the temporo-sphenoidal lobe; the wall of the sigmoid sinus was normal in appearance. Although there was no obvious sign of labyrinthine disease, microscopical examination of the inner ear revealed the presence of purulent infection.

On *post-mortem* examination the abscess cavity was found to be completely drained: the lateral ventricle was intact. A thick purulent meningitis extended over the inferior surface of the

cerebellum, round the pons and medulla, and in the interpeduncular space. A pure growth of the *Streptococci pyogenes* was obtained from the mastoid cells, and also from the pus in the cerebral abscess. In this case the cerebro-spinal fluid was drawn off under considerable tension, and was turbid, containing a large number of polymorphonuclear cells and a few large mononuclears; no organisms were grown from it. The leucocytosis was 28,600, and there was 92 per cent. of polymorphonuclear cells. The general condition of the patient suggested the presence of a brain-abscess. He vomited at irregular intervals, and at the outset of his illness complained of great pain in the left side of the head—the same side as the affected ear. He then became lethargic and dull, and at times unconscious. He could understand spoken words when roused, and his word-memory was good. He could name objects shown to him. There was paresis of the right arm and leg. The pupils were equal and reacted to light and accommodation; there was no optic neuritis.

*Results of Treatment.*—Operation was performed in all the fourteen cases of the series. The diagnosis of lepto-meningitis was not regarded as a contra-indication to operative interference, as it was considered right to remove the primary focus of infection in the middle-ear cleft, and by repeated lumbar puncture to remove as far as possible the infected cerebro-spinal fluid. Of the fourteen cases, four recovered and ten died. The four successful results were obtained in uncomplicated cases of sigmoid sinus thrombosis, two complicating acute and two chronic middle-ear suppuration. The case of uncomplicated cerebellar abscess survived for two and a half months after operation, but at the end of that time died from meningitis. If the eight cases of lepto-meningitis be deducted from the total, we have six cases without meningitis, of which four recovered and two died, the two fatalities being the case of cerebellar abscess just referred to, and a second case of cerebellar abscess with sinus thrombosis. In the latter case death resulted from septic encephalitis in connection with the cerebellar wound; obliteration of the sinus followed the operation, and no further trouble was experienced with it. The cases of sinus thrombosis were the most satisfactory to deal with. In all of them the internal jugular vein was divided between two ligatures as a routine practice, and the upper part of the vein and jugular bulb syringed out; thorough removal of the clot from the upper part of the sinus was recognised by the free bleeding which occurred. Although practice differs as to the treatment of the

jugular vein in this class of case, we are of opinion that it is a wise procedure to remove the entire clot and thus destroy the main focus of infection. For this purpose ligation and division of the vein with subsequent washing through is a necessary procedure.

In conclusion, I wish to express my thanks to the Staff of the Pathological Department of the Royal Infirmary for their assistance in the bacteriological work, and to Drs. W. B. Hendry, Terras Bell, Robert Godsall, G. A. Davies and H. P. Milligan, my clinical assistants in the Department.

### **MODIFICATIONS INTRODUCED INTO BRONCHO-ÆSOPHAGOSCOPIC INSTRUMENTATION AS THE RESULTS OF EXPERIENCE.**

BY DR. GUISEZ

(Paris).

(Translated by K. DICKSON.)

ILLUMINATION remains, and always will remain, the delicate point in tracheo-bronchoscopy.

A principle which ought to guide us in the choice of a lamp is that the lighting apparatus must, in the first place, be appropriate to the shape of the tubes which are used. Tubes and lamp must not vary "a hair's breadth," so to say, and such a tube as would suit Kirstein's lamp could not be used with another lamp. We use continually and satisfactorily our lamp with three lights of different focuses. Without becoming heated, and capable of great illuminating power, it allows of a very exact view right at the end of long and narrow tubes. But as all specialists to-day use a Clar's mirror it seemed to us that it would be useful, in order to simplify the instrumentation, to adapt Clar's mirror for seeing down the bronchoscopic tubes (Fig. 1).

In order to adapt the tubes to this illumination it is sufficient to provide them with a very large funnel destined to collect in some measure the luminous rays issuing from the lamp. It should, by preference, be movable, being adaptable to a screw-end with which the tubes are provided. In fact, in order not to try the observer's eye with the reflection of the rays, this funnel should be black in its interior. Besides, the tubes must, after each examination, be sterilised and cleaned with alcohol to preserve their brilliance; the black coating would not stand these cleansings

long, and the funnel would again become bright and trying to the sight. For this reason it is preferable to use a movable funnel. If it were desired to adapt Clar's mirror very exactly so as to obtain a view of the bronchi a very long focus could be chosen, with a single opening, allowing of very exact monocular vision.

The introduction of the œsophagoscopic tube seemed to us singularly facilitated by the use of a *special mandrin*, half rigid

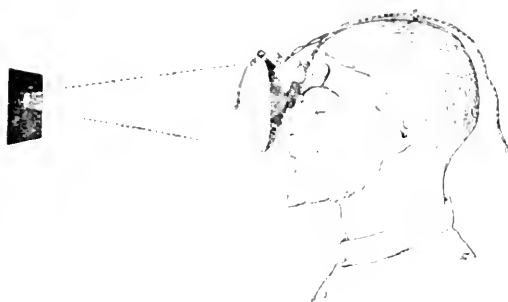


FIG. 1.—Clar's photophore.

and half flexible. This mandrin is made of metal as far as the lower extremity of the tube: it extends beyond this as a bougie of gum elastic 10-12 cm. in length (Fig. 2).

The use of this mandrin seems to us to have the following advantages: It allows of the gliding of the tube to the back of the arytenoids and the cricoid cartilage; it passes easily behind them and carries after it the tube which it guides. It is much less

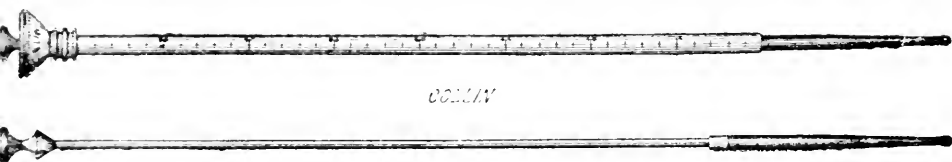


FIG. 2. —œsophagoscopic tubes and mandrin with flexible end of gum-elastic.

dangerous, and acts as a much better guide than a mandrin made entirely of metal, and it facilitates what is the difficult point in œsophagoscopy—the introduction of the tube into the upper orifice of the œsophagus. It offers, on the other hand, over the mandrin consisting solely of a bougie of gum-elastic, and which is generally used, the advantage of not wedging up against the lower extremity of the tube. The stiff guide with which it is provided allows of its being very easily withdrawn.

In superior bronchoscopy the *detachable tube spatula*, which

Collin has made for us, allows of the raising of the epiglottis in difficult cases, and the introduction of the tubes past the glottis. It can easily be withdrawn as soon as the glottis is passed, the spatula being separable into two and taken to pieces with the greatest ease.

For those instruments which have *forceps* for the extraction of foreign bodies, we have had their shanks modified, and we have so arranged that the forceps remain immovable at the moment of extraction. It is the sheath alone which encompasses the teeth of the forceps and causes them to close. We also have at our disposal a universal handle, very supple and of great strength—a point which is not to be despised in the extraction of foreign bodies, often covered with false membrane and difficult to seize.

All these details of instrumentation which we have had modified are of importance. We ask pardon for insisting upon them,



FIG. 3.—Bronchoscopic tubes and metal handle for mounting them.

but broncho-œsophagoscopy requires to be executed with the greatest exactness and the utmost possible precision, and it is necessary that the instruments should be appropriate to the difficult cases, otherwise one is liable to fail or cause the most serious accidents.

Not only has œsophagoscopy during the last three years furnished us with the means of finding out and of determining exactly the nature of the lesions which can be recognised by vision, but it has also given us the best therapeutic results. It has enabled us to *extract a number of foreign bodies*, many of which were impacted (bones, dental plates), and to cure *cicatricial strictures* intractable to ordinary measures.

We have succeeded in curing seventeen patients suffering from cicatricial stricture and one congenital, of which five had had gastrostomy performed.

Having the small opening more or less eccentric, the remainder of the lumen of the œsophagus, well in view in the œsophagoscope, we have been able either to dilate it by the use of bougies of



increasing size, or, with the help of our special cesophagotome, really to do internal cesophagotomy under cesophagoscopy.

By cutting, or more often pulling, away the cicatricial bands which narrow the cesophagus, one creates an impetus to dilatation; the bougies do the rest as in internal urethrotomy.

Since our communication to the Parisian Chirurgical Congress in October, 1905, concerning the three first cases which were operated on in France, we have determined the technique and the indications for this internal cesophagotomy performed under vision. Bronchoscopy has enabled us to establish the diagnosis in seventeen cases of foreign bodies in the air-passages, and to extract fourteen.

In three cases only have we had recourse to inferior bronchoscopy. In one of these, the first we extracted (a nail in the third bronchial ramification), we were obliged to make a temporary

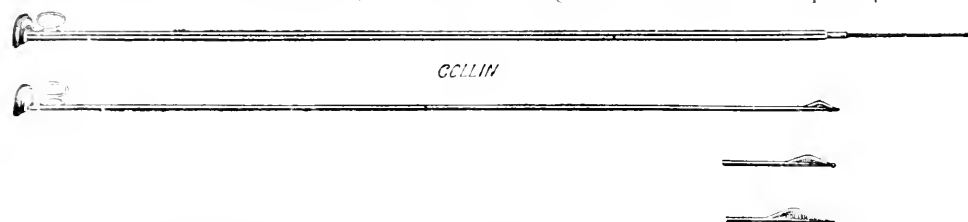


FIG. 4.—Cesophagotomy knife with three different blades and conducting bougie.

tracheal wound for the introduction of the tubes. We were not at that time familiar with the method. In the second, a soldier of the Val-de-Grâce who had had tracheotomy performed, we were called upon to extract a cannula which had become detached from the plate and had fallen into the right bronchial tube; we naturally made use of the tracheal wound. In all the others (bones, date-stones, trumpet-reeds, tooth-picks, etc.) we have been able to pass directly down the glottis and to operate without any wound. In the third the little patient, who had a picture-ring in the bronchus, had already had a tracheotomy wound made to avert immediate asphyxia when we examined him.

We have not observed in a single case broncho-pulmonary complications as the result of the introduction of these tubes, and it is remarkable to notice how long the bronchi remain tolerant during the explorations. Elastic, supple, but possessed of a certain resistance, they shape themselves according to the tube, take its rectilinear direction, and permit of examination with the greatest ease.

## SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF  
MEDICINE—LARYNGOLOGICAL SECTION.

*Meeting on Friday, June 4, 1909.*

DR. DUNDAS GRANT, *President, in the Chair.*

*Abstract of Proceedings by* DR. DAN MCKENZIE.

The following cases and specimens were shown :

CASE OF INFILTRATION OF THE VESTIBULE OF THE LARYNX WITH  
INTRA-LARYNGEAL FUNGATION.

By DR. DUNDAS GRANT.

(Shown at May meeting.)

Since the last meeting this patient had continuously taken iodide of potassium and biniodide of mercury. She had no sore throat, stridor, or difficulty in swallowing. The voice was still reduced to a whisper. There has been no return of the neoplastic growths in the larynx; but, on the contrary, there had been a retrogression of the granulation formation below the right vocal cord, and a slight increase of mobility of the ary-epiglottic folds.

In answer to Dr. Hill, Dr. GRANT said he thought the infiltration was gummatous. It seemed to be improving under anti-syphilitic treatment.

CASE OF RADICAL OPERATION FOR FRONTAL SINUS SUPPURATION,  
KILLIAN'S METHOD, WITH EXCEPTIONALLY RAPID HEALING, BUT  
WITH PERSISTENCE OF SUPRA-ORBITAL PAINS, IN A YOUNG  
WOMAN.

By DR. DUNDAS GRANT.

The patient, aged seventeen, was first seen in January, 1908, complaining of purulent discharge from the nose of eighteen months' duration, and of pain over the left frontal and maxillary region. Her frontal sinus had already been opened, but the symptoms persisted, and in April the exhibitor performed Killian's radical operation in its complete form. The original infundibulum was

already obliterated, but a new passage was made and the ethmoidal cells were well curetted. A plug of gauze was placed in the inner part of the sinus and carried down to the external nostril. The antrum was explored through the nose, but the wall was found to be greatly thickened; it was not, therefore, opened in the canine fossa. The wound was closed with horse-hair and silk sutures. Healing took place with exceptional rapidity, and the patient returned home in a week.

Since the operation she had complained of severe pain in the left supra-orbital region, but there was no evidence of return of frontal sinus suppuration, and it was thought probable that the pain was due to a neuritis of the supra-orbital nerve. The pain varied in its intensity, and was sometimes very marked in the infra-orbital region and lateral part of the right orbit; under these circumstances it was doubtful whether an exposure and extraction of the left supra-orbital nerve was likely to be of benefit. She had been treated with quinine, and latterly with gelsemium and with croton chloral, also bromide of potassium with valerian. The exhibitor would be glad to hear the experiences of members with regard to such a course of events.

Mr. HERBERT TILLEY had seen a similar case six weeks ago. The operation on the frontal sinus had been performed by another surgeon, but without any relief to the pain, which was so severe as to incapacitate the patient from performing the ordinary duties of life. Many remedies were tried in vain: Faradism, drugs like aspirin and phenacetin, and change of air. At last he suggested the removal of some still smouldering ethmoidal disease, which was the only source of trouble that could be found. This was done and there had been no return of the pain since. In the present case there seemed also to be some ethmoidal disease if one could judge from some dried polypi still present in that region. He also observed a firm adhesion between the middle turbinal and the septum. If the ethmoidal region was curetted and this adhesion divided, relief from the pain might be secured.

Dr. HILL was of opinion that the usual cause of pain persisting after operation on the frontal sinus was disease in the other sinuses. In some cases, however, he had found definite osteitis and periostitis to be responsible. In one such case under his care every sinus had been opened, but there was great periostitis of the remaining osseous tissue about the sinuses, with the result that the pain continued for six or eight months.

Mr. SCANES SPICER recommended that the adhesion and the ethmoidal disease should first of all be attended to. He himself always followed Woakes's practice of clearing out the ethmoidal region first in cases of frontal sinus suppuration, because when this was done most cases were so much relieved that further operation was unnecessary.

Mr. H. J. DAVIS regarded the pain as due to neuralgia or neuritis, and he had obtained much benefit in such cases from the internal administration of Easton's syrup in drachm doses.

Dr. DONELAN asked whether the pain after the operation was in the

original site or further out, because in a case he had operated on for pain persisting after operation a complete septum was found dividing the sinus and concealing further disease. He agreed with Mr. Scanes Spicer as to the wisdom of curetting the ethmoidal region before deciding to operate on the frontal sinus.

The PRESIDENT (Dr. GRANT), in reply, said the pain was not merely in the supra-orbital region but also in the infra-orbital and the supra-orbital on the opposite side. The anterior part of the middle turbinal was removed in the first instance. When she first came under his care she had been operated upon elsewhere, and when she came to him the infundibulum had been completely obliterated. He did not think there was any retention in the meantime. He thought the pain was neuralgic, and Dr. Davis's suggestion appealed to him; perhaps the several operations had disturbed her nervous system. He had been treating her by quinine, gelsemium, croton chloral, bromide of potassium, valerian, and iodide of potassium. When he opened the left antrum through the nose there was tremendous thickening of the facial wall of the antrum. He would bring the case forward again.

CASE OF FRONTAL SINUS SUPPURATION OF SHORT DURATION (FIVE MONTHS) IN A YOUNG MAN; MODIFIED OPERATION UNSATISFACTORY; KILLIAN'S RADICAL OPERATION; RAPID RECOVERY.

BY DR. DUNDAS GRANT.

The patient, a man, aged twenty-nine, was first seen in December, 1908, on account of symptoms of suppuration in the left maxillary antrum. An alveolar opening was made and he syringed it out with borax, boracic acid and peroxide of hydrogen. When first seen there was dulness on transillumination of the left antrum only, but when he was examined again in April the frontal sinus was also found to be opaque. The anterior third of the middle turbinal was removed, also the anterior lip of the hiatus semilunaris. It was found possible to wash out the frontal sinus and some pus was evacuated. No pain or tenderness was elicited, but on account of persistence of the suppuration it was decided to open the frontal sinus. An opening was made in the anterior wall and pus was found under tension. The cavity contained a large amount of granulation-tissue. The sinus was very large, extending slightly across the middle-line, but externally reaching the outer angle of the orbit. In view of the short duration of the disease it was considered justifiable to remove only a portion of the anterior wall and to make a counter-opening in the bone at the outer angle of the orbit. Drainage-tubes were introduced through this outer opening and also down the infundibulum to the nose. Syringing was carried out through these drainage-tubes, but in a fortnight's time when the drainage-tubes were removed the discharge into the

nose from the sinus was so considerable that the exhibitor decided to carry out Killian's complete radical operation on the frontal sinus. At the same time the antrum was freely opened through the canine fossa. The cavity was packed and drained through the inferior meatus of the nose. The antrum was found to contain a quantity of fetid pus. In two days the plugs were removed, the healing of the frontal sinus wound took place with great rapidity, and the discharge diminished in a way it showed no sign of doing after the modified operation.

CASE OF FRONTAL SINUS SUPPURATION DUE TO GUN-SHOT INJURY IN  
A FEMALE PATIENT, AGED TWENTY-SIX; RADICAL OPERATION WITH  
UNUSUAL FINDINGS; RELIEF.

BY DR. DUNDAS GRANT.

The patient, a woman, aged twenty-six, was first seen in March, 1909, complaining of discharge from the nose of seven years' duration; also of pain in the left supra-orbital region. There was a vertical depressed scar in the middle line of the forehead dating from a gun-shot wound, which had required some seven operations, probably for the removal of shot and portions of necrosed bone. On account of the pain and discharge the exhibitor thought it advisable to perform Killian's radical frontal sinus operation. When the anterior wall of the sinus was removed a bluish, bulging, pulsating membrane was exposed, which was of extremely thin consistency. The whole of the anterior wall was then removed outwards and upwards, but no posterior wall could be found. During the exploration the membrane was punctured and some watery fluid escaped, after which the membrane collapsed. The bony floor of the frontal sinus was then removed in the usual way, and the operation was completed. The exhibitor was in complete uncertainty as to the nature of the pulsating membrane, but in view of the disturbance of the normal topography produced by the injury and by the previous operations he felt that it was safer to close up the wound in uncertainty rather than to risk making an opening into the meningeal space. During the following night the patient had some delirium and vomiting of a "pumping" nature for twenty-four hours. This ceased, however, towards the evening, and when the wound was dressed it was quite healthy in appearance. The temperature never went above  $99.2^{\circ}$  F., and no disturbing symptoms presented themselves. She had still some discharge from the nose, but asserted that her head was freer

from pain than it had been for several years. The exhibitor requested opinions as to the nature of the exposed membrane.

SIR FELIX SEMON remarked that the injury to the forehead was described as a "gun-shot" wound. It had been inflicted, however, with a pea rifle, and the bullet had, he supposed, entered the frontal sinus and had shattered the posterior wall. This would account for the absence of that wall found at the operation. If a shot-gun had inflicted the injury the patient's face would have been seriously damaged.

Dr. HILL asked whether the pulsation of the membrane was synchronous with the pulse or with respiration.

The PRESIDENT, in reply, said the tumour pulsed with respiration. The gun was in the patient's own hand, so that it must have been fired point-blank.

Dr. DAN MCKENZIE, who had assisted Dr. Grant at the operation, suggested that the membranous swelling enclosing the fluid was an arachnoid cyst due to the original traumatism. This he considered the only explanation that in any way accounted for the unusual findings.

Dr. HILL asked if the dura was absent.

Mr. FITZGERALD POWELL said that if it was assumed that the sinus was a very small one to begin with, the anterior wall might have been destroyed by the accident, and in that case at the operation the posterior had been mistaken for the anterior wall. Cases undoubtedly occurred where the sinus was so small that at operation it was not discovered at all.

The PRESIDENT considered Dr. Fitzgerald Powell's suggestion most ingenious, but he did not think, with the care taken in the operation, that if the condition mentioned had been there it would have been overlooked, because in removing the wall the infundibulum was found behind it.

Dr. PEGLER agreed with Mr. Fitzgerald Powell that the frontal sinus was occasionally so small that when the anterior wall was removed no sinus was disclosed.

#### PATIENT WITH CONGENITAL FISTULA IN MID-LINE OF NOSE.

By DR. LAMBERT LACK.

The patient had a small fistula in the median line of the nose opposite the junction of the cartilages and bones. The opening barely admitted the finest probe. The sinus ran upwards towards the nasal bones. Four patients with this exceedingly rare condition were at present under his care. He had never seen one before, but one case of dermoid cyst in this region was shown at an early meeting of this Society. The microscopical specimens were prepared by Dr. H. M. Turnbull, of the London Hospital, from the first case operated on. The fistula dilated below the surface, forming a small trumpet-shaped mass. Dr. Turnbull reported that on longitudinal section the epithelium dipped down with its horny covering on each side of a narrow channel, which dilated to form the wider cavity. This latter cavity was lined with epithelium with horn,

and in one of its walls were hairs. The deeper part of the trumpet-shaped mass consisted of vascular connective tissue, with a central small oval mass of squamous epithelium surrounded by a "palisade" layer of basal cells lying on a hyaline basement membrane. It was solid and showed no horn. At one end the cells were swollen, suggesting a sebaceous gland. In one section there was a special layer of connective-tissue cells, apparently dermis of a hair-follicle. These epithelial growths had, therefore, the structure of hair-follicles. There were some sweat-ducts in this section.

Microscopical sections of a similar sinus removed from another patient were shown.

Dr. HILL remarked that according to the patient's mother nothing was noticed on the nose at birth, and nothing appeared until after the patient went to school. At the age of five years a foreign body was found in the nose, and discharge appeared at that time. The present trouble dated from that incident. Consequently he doubted whether it should be termed "congenital."

Mr. FITZGERALD POWELL had seen three or four of these cases with ingrowing cuticle. Sebaceous matter was exuded, and when probed they were found to be like the congenital sinuses met with in the neighbourhood of the ear.

Mr. KELSON, in 1904, had seen a case similar to this one. Congenital "sinus" was the proper term, not "fistula," because they did not lead to any cavity. It was curious that nine out of ten parents of these cases denied the appearance of anything abnormal at birth. Probably they were cysts which broke and left a sinus. The developmental origin was proved by the microscopical examination.

Dr. PEGLER had, in 1907, seen a similar lesion in an adult, from Australia. It was operated on by Mr. Walsham and cured.

Dr. WATSON WILLIAMS reminded the Section that these abnormalities were due to incomplete fusion of the pre-oral arches. A case had been published and illustrated by Mr. Stewart some time ago in which a deep depression in the nose existed.

Mr. HERBERT TILLEY had recently seen a similar case in which there was also a dermoid cyst of the temple, which was removed by Sir Victor Horsley.

SEQUEL TO CASE OF INTRINSIC LARYNGEAL NEOPLASM (CHIEFLY OF LEFT VOCAL CORD) OF UNUSUAL APPEARANCE IN A MAN, AGED SEVENTY-THREE.

By Dr. R. H. SCANES SPICER.

(Previously shown June, 1905, February, 1906, March, 1908, April, 1908.)

The case had been operated on by another surgeon, but the patient died shortly after the operation. No evidence of malignancy had been forthcoming.

Dr. HILL said that the operation had been performed by him because he had considered the disease to be malignant. When the patient came to him he was suffering from dyspnoea due to the laryngeal obstruction. Tracheotomy was called for, and so the speaker concluded thyro-fissure might as well be done. The operation was accordingly performed, and, clinically, the growth seemed to be malignant. It was, however, very soft and friable, and could not be removed *en masse*, so that it was impossible to obtain a satisfactory specimen for pathological examination. Still, he had no doubt that it was malignant. The patient was old and feeble, and, on account of the free bleeding which had occurred at the operation, he left the Hahn's cannula in position for the first night. About forty hours after the operation the temperature rose; and the patient died in two days. He was unable to cough after the operation.

Dr. PEGLER reported that the last set of slides bearing sections from specimens removed intra-laryngeally from this case showed distinct evidence of malignancy in cell-nests, etc. The first set examined had revealed only papillomatous tissue with keratosis.

Dr. JOHNSON HORNE expressed the indebtedness of the Section to Mr. Scanes Spicer for the opportunity of following up the case to its unfortunate end. The absence of a post-mortem examination of the larynx, however, left the question of malignancy still unsettled. The whole question of cell-nests depended upon how the tissue was cut, for papilloma, if cut obliquely, would show cell-nests.

#### REMOVAL OF A MACHINE NEEDLE RIGIDLY IMPACTED IN MEDIAN SAGITTAL PLANE OF THE LARYNX OF A YOUTH AFTER SOME ALARMING SYMPTOMS (NEEDLE AND DIAGRAM SHOWN).

By DR. SCANES SPICER.

The needle lay in the antero-posterior diameter of the larynx with one end at the cricoid and the other near the hyoid bone, under the epiglottis. It could be both seen and felt, and removal was first of all attempted under cocaine, but it was so firmly wedged that the attempt had to be given up. Chloroform was then administered in the upright position, and, under X-ray illumination, the needle was caught and forcibly pulled on with Mackenzie's forceps. A sensation of something giving was then experienced, and the patient turned pale and stopped breathing. After he had been laid flat and breathing had been re-established, it was discovered that the extremity of the needle had perforated the front of the larynx, and that its point could be felt under the skin. An incision was made over it and the needle removed.

#### A CASE OF MYCOSIS OF TONSIL, PHARYNX AND TONGUE IN A MAN, AGED THIRTY.

By DR. SCANES SPICER.



## MAN, AGED THIRTY-ONE, WITH LARYNGEAL GROWTH.

BY DR. IRWIN MOORE.

The patient, a clerk, came to the Throat Department, King's College Hospital, on April 6, complaining of hoarseness of voice for three years, coming on gradually, with sore throat for past seven weeks; only as voiceless at present since February last. There were no signs of tuberculosis of lungs; no temperature; no enlarged glands. On examination an irregular growth was seen projecting from the left ventricular band, covering all but the posterior end of vocal cord on that side, which was fixed; no ulceration of surface. This case was similar to one shown at this meeting on March 5 last. Opinions were invited as to diagnosis.

Mr. H. J. DAVIS was of opinion that the growth was a papilloma in an unusual situation.

The PRESIDENT considered it, on account of the smoothness of its surface, more likely to be a fibroma, possibly oedematous.

WOMAN, AGED FIFTY-FOUR; CHRONIC MAXILLARY SUPPURATION  
SIMULATING MALIGNANT DISEASE.

BY DR. DONELAN.

The patient was admitted to the Italian Hospital, March 14, 1909, under the care of Mr. T. P. Legge. There was a large fungous mass occupying almost the whole right alveolar border and extending nearly to the middle line of palate. Two or three delayed tooth-stumps and whole area of superior maxilla swollen and tender. Condition had arisen gradually in previous three months. Appearances suggested sarcoma. On March 19 Mr. Legge extracted the stumps, perforated the alveolus and found pus. Microscopically the fungous mass consisted of inflammatory tissue. Treatment of suppuration and inflammation by irrigation through alveolar border. Mr. Legge transferred patient to exhibitor for intra-nasal operation. This was done on April 16, and consisted in the removal of the middle third of the inferior turbinal, together with a large triangular portion of the external nasal wall by means of rectangular chisel. The posterior portion of turbinal being polypoid was removed on April 22. Patient made good recovery, though there was pus still at times, probably due to re-infection through alveolar opening, which it was now proposed to close. The anterior portion of turbinal was left because it bore no useful surgical relation to the antrum, while its removal

endangered the nasal duct, and because leaving it gives some protection to the newly exposed cavity from the respiratory current.

The PRESIDENT asked whether anyone could explain the swelling on the palatal surface on the exterior border, which might be periostitis from the diseased tooth.

A LITTLE GIRL, AGED TWELVE, WITH A PRIMARY SORE ON THE  
UPPER LIP.

BY DR. H. J. DAVIS.

The child attended in the Department for what was diagnosed as "mumps" fourteen days ago. This week what was undoubtedly a Hunterian sore was visible in the middle line of the lip. The enormous collar of glands, which were as hard as stones, was characteristic of the disease. No family history of any affection. The mother was a manageress in a laundry. Though it was possible that herpes with septic glands, anthrax, or infection from a vaccination pustule might cause such a condition, the colour and dry appearance of the "scab" on the lip and the unusual glandular enlargement was typical of primary syphilis at the junction of skin and mucous membrane. Several who had seen the child did not agree with the diagnosis, and the exhibitor asked the opinion of the Section.

Photographs relating to the case were shown, also a slide showing spirochaetae.

Dr. JOSEPH HORNE, referring to primary sores on unusual situations, recalled to memory several which Dr. Davis had shown, one a case of chancre of the ala nasi. Remarking on the opportunities which members of this Section enjoyed of seeing many such cases, he suggested that a report dealing with the cases which they had had on exhibition would prove a valuable addition to the literature of syphilis.

Mr. DENNIS VINRACE asked the exhibitor whether the date of the appearance of the lesion on the lip had been definitely fixed. The patient's mother said that five weeks ago the lip was quite sound, and at the present moment a secondary syphilide was to be seen on the skin. The glandular enlargement might be due to causes other than syphilis.

Mr. ARCHIBALD SMITH had prepared the smear which showed the spirochaetae from secretion obtained under the scab covering the chancre. None were found in fluid from the glands. The glandular enlargement was probably not entirely syphilitic. Hence the difficulty of finding spirochaetae in that situation.

The PRESIDENT said that when Dr. McKenzie punctured for him the glands in a case of his two months ago no spirochaetae were obtained from that fluid, nor from the surface of the chancre, but only from needling in the depths of the chancre, and that bore out what Mr. Archibald Smith had said.

Mr. KELSON remarked on the slight induration around the sore on the lip, and emphasised the importance of diagnosing these cases early.

Dr. DAVIS, in reply, said the patient had some carious teeth, but the glandular enlargement was due, he thought, to the specific disease. Induration in these sores was usually very slight. No doubt the infection had entered by a crack in the lip. He had some time ago investigated the spread of the disease in one family in which four individuals were infected through the mouth. Dr. Abraham had informed him that in Africa and elsewhere in the tropics the extra-genital syphilis ran through whole families. Since the notes on this case had been made he had discovered that a sister of the patient was suffering from the disease, mucous patches having appeared in the mouth and on the tonsils.

## THE BERLIN OTOLOGICAL SOCIETY.

November 6, 1908

Dr. LUCÆ *in the Chair*.

*Abstract of the Report of the Proceedings by Dr. SONNTAG.*

### TINNITUS AURIS OF A CLICKING CHARACTER.

By Dr. GROSSMANN.

The patient was a woman, aged twenty-three. The tinnitus could be heard by others, and was the more peculiar as it gave the impression of originating in the nose since the sound seemed to issue from the nostrils. The cause was a clonic spasm of the M. tensor palati, which could be seen during inspection of the nares.

### EXFOLIATION OF THE COCHLEA.

By Dr. LUCÆ.

This was a man, aged sixty-five, whom he had had under observation for some years, and whose right ear was the seat of an extensive caries and a cholesteatoma had formed. All operative interference had been declined, so that the treatment had been purely expectant, and two sequestra had been discharged from the inner ear, which represented almost the entire cochlea, after which healing took place within a short while, and the cavity was now soundly covered with epidermis. Shortly before the cochlea had exfoliated the patient remarked that he heard decidedly better

with the right ear, and on examination it was further discovered that it made no difference whether this meatus was closed or open whilst the left ear was occluded. The patient also observed that he could hear conversation on the right side better whilst in noisy surroundings if he closed the sound ear on the left side. The tuning-forks C 4, C 3 and C 2 were heard on the right side, this fact being determined as follows: The meatus being closed the tuning-fork was held close to the right ear till it could no longer be perceived; the meatus was then uncovered, when it was found that the note could again be heard. C 5 and C 6 were not heard. Some difficulty arose in explaining this condition, as it was not known precisely how much of the cochlea remained.

Dr. LUCÆ referred to the "noise" apparatus which Bárány had lately introduced for the purpose of absolutely eliminating the perception of one ear whilst the other was being investigated, and remarked that he himself had already, for the last year, adopted a similar method by utilising the oto-massage machine.

Dr. SCHÄFER considered that the solution of this phenomenon lay in the conduction of the sound-waves through the skull. Possibly also tactile sensibility should be taken into account.

Dr. DEXPERT had made similar observations to those of Dr. Lucæ in a case in which he had had to remove the vestibule, semi-circular canals and cochlea on account of caries.

Dr. WAGENER suggested that closing one ear in itself produced noises which interfered with the accurate perception of the other ear. Thus the improvement reported in the case in question should not be regarded as dependent on a maintained power of perception, but as attributable to the removal of a disturbing influence from the sound ear.

Dr. LUCÆ, in reply, said that he had carried out the tests in this case in the following manner: The hearing was first tested with the sound ear closed and the diseased one open, and then, whilst the tuning-fork could still be heard by the diseased side, the sound side was suddenly opened, and then also the note was still heard in the diseased ear because the power of perception in the sound side was depreciated. The fact that some musical sounds and conversation were heard on the diseased side pointed to the conclusion that there were still some "islands" of hearing remaining.

Dr. CLAUS remarked, in reference to Weber's test, that when the tuning-fork was placed on the vertex the sound-waves were not merely confined to the bone but also set the air in the meatus in

motion, as, indeed, Dr. Lucæ had demonstrated both in the cadaver and the living subject. When the ear was closed the sound-waves were reflected on to the tympanic membrane and the note thereby intensified.

Dr. DENNERT said that sound-waves were conducted with less intensity by air than by media of a firmer character. Weber's test was of little value for purposes of differential diagnosis by itself on account of the varying consistency of skull-bones, and it should only be regarded as corroborative, the chief point being to test the hearing by air-conduction.

Dr. LUCÆ reminded the meeting that he had previously described a test which showed that the intensification of the sound during Weber's test was dependent on the relation both of the meatus to the lower tuning-forks and of the length of the sound-waves to that of the meatus, and that the intensification of the sound was due to resonance.

Dr. DENNERT recommended caution in the investigation with conversation tubes, as different results were obtained with tubes of different diameter.

#### CYSTICERCUS RACEMOSUS OF THE BASE OF THE BRAIN CAUSING DISTURBANCE OF HEARING.

By DR. BENDA AND DR. SCHWABACH.

The patient was a woman who suffered with giddiness, left-sided headache, and extreme deafness in the left ear. The tympanic membrane was normal on both sides, the range for whispers on the right normal, on the left almost *nil*. The discs were choked, and she had facial paralysis on the left side. Weber was referred to the right ear; there was no nystagmus. Lumbar puncture revealed a clear fluid under raised pressure. Disease of the inner ear was diagnosed, due to a tumour of the cerebellum involving the eighth nerve. At the autopsy a *Cysticercus racemosus* was found at the base of the brain, with inflammatory thickening around the facial and auditory nerves.

Dr. BENDA, who performed the *post-mortem* examination, said that he had found a *Cysticercus racemosus*, a form of the *Cysticercus cellulosæ*, which, as Zenkers has pointed out, exhibits a preference for the meninges, and which takes a rather long time to develop. One could even see with the naked eye that the tumour invaded the medulla. Other cysticerci were also found in the ependyma. The condition had given rise to a certain amount of giant-celled

infiltration, so that in this respect there was some resemblance to syphilitic and tubercular tumours.

A TUMOUR OF THE PETROUS BONE ASSOCIATED WITH MULTIPLE PARALYSES.

BY DR. BIELSCHOWSKY AND DR. SCHWABACH.

This occurred in a woman whose tympanic membranes were normal, who had facial paralysis, and suffered from dizziness and vomiting. A tumour lying in the angle between the pons and the cerebellum, involving the eighth nerve, was diagnosed. The hearing on the right side was normal, on the left side complete deafness. There was no nystagmus. Weber to the sound ear.

*Post mortem* a tumour was found invading almost the whole petrous bone.

Dr. BIELSCHOWSKY laid stress on the paralysis as a means of differential diagnosis. No less than eight nerves were paralysed, which was to be explained by the growth in the petrous bone pressing on the nerves as they issued through the foramina. A tumour in the angle between the pons and the cerebellum did not affect the nerves so soon. On the other hand, a tumour in the petrous bone was usually slower in its development. The lack of cerebellar symptoms, cerebellar ataxia, and conjugate deviation of the eyes all were in favour of a growth of the petrous bone.

Dr. STURMANN had examined the larynx in this case and had at once been able to recognise paralysis of the arytenoides posticus; later complete recurrent paralysis had occurred.

Dr. WAGENER asked if the caloric nystagmus had been investigated.

Dr. SCHWABACH replied that this had not been tested, since at the time when this case first came under observation (three years ago) no importance was attached to this test.

Dr. WAGENER considered that the failure of response to the caloric tests was a very early symptom in cases of tumour of the eighth nerve. Multiple paralyses were of little value in differential diagnosis, since tumours of the petrous bone commenced in various positions. The condition of the tympanic membrane was the most important point, as tumours of the petrous bone were nearly always associated with middle-ear disease. X-ray pictures were also of use, because lesions of the mastoid process could be demonstrated by this means.

Dr. GRABOWER agreed with Dr. Bielschowsky as regards his

view of tumours in the angle between the pons and the cerebellum.

Dr. WAGENER had found the same symptoms described in nine cases of tumour involving the auditory nerve, viz. choked disc, destruction of the cochlea, failure of vestibular reaction, and facial paralysis.

Dr. BIELSCHOWSKY did not rely on any one single symptom, but was in agreement with the other speakers as regards the value of choked discs in cases of cerebellar tumours.

Dr. SCHWABACH, in conclusion, took exception to the statement that tumours of the petrous bone were nearly always due to middle-ear disease; in his case the tympanic membrane was normal.

#### GUMMA OF THE MASTOID PROCESS WITH SYPHILITIC LESIONS ON THE FLOOR OF THE NOSE.

BY DR. BRUNCK.

#### A CASE OF LUXATION OF THE INCUS.

BY DR. BEYER.

The patient, after a fall on the stairs, suffered from a discharge in the ear and tinnitus. In the right ear the hearing was normal, on the left side whispers were only heard *ad cocham*. Weber was referred to the diseased side. As the discharge ceased a whitish protuberance could be detected in the posterior superior quadrant, which gave the impression of bone to the probe and which could only be the dislocated incus. Dr. Passow had removed the incus under a general anæsthetic; the long process of this ossicle was found to be broken. The tinnitus ceased immediately after the operation, and the patient could now hear whispers at a distance of three to four metres.

ALEX. R. TWEEDIE.

Dr. O. T. FREER, Professor of Laryngology at Rush Medical College, Chicago, U.S.A., has been elected Corresponding Fellow of the Danish Otological and Laryngological Society.

## THE VIENNA LARYNGOLOGICAL SOCIETY.

*January 13, 1909.*PROFESSOR CHIARI *in the Chair.**(Abstract Account of the Proceedings.)*

## TOTAL EXTIRPATION OF THE LARYNX FOR CARCINOMA.

BY PROF. CHIARI.

A male, aged forty-eight, had come to consult him on September 10, 1908, complaining that his voice had been husky for the last year. Both vocal cords were red, thickened, infiltrated and uneven, but movable. On the left the growth was comparatively circumscribed, whilst on the right the whole cord generally was involved. Pieces removed from the left ventricular area on the next day proved to be epithelial carcinoma. Thyrotomy was advised. On October 23, in consultation with Dr. Hajek, several pieces were removed from the larynx, which, however, only consisted of inflammatory tissue. In the middle of this month tracheotomy had been performed by Dr. Hansey on account of dyspnoea. As no tumour could now be detected it was decided to adopt an expectant line of treatment. The patient was not seen again till December 15, when the right cord was found movable and almost normal in appearance, but the left ventricular band was much infiltrated, and a small growth could be seen in front of it, whilst the arytenoid cartilage on the same side was swollen and fixed. Histological examination showed this condition to be carcinomatous. Extirpation of the larynx was therefore decided upon, and was undertaken on December 22, a total removal being found necessary although excision of only one half was contemplated beforehand. The trachea was united forwards to the skin, and the pharynx completely closed. Recovery was uneventful, with the exception of the formation of a small fistula beneath the hyoid, which, however, soon closed. The patient now could swallow easily, and could make himself understood in a whisper. He was now to begin to practise speaking.

## PRIMARY PEMPHIGUS OF THE MUCOUS MEMBRANE (WITHOUT INVOLVEMENT OF THE SKIN).

BY DR. EMIL GLAS.

The patient was a woman, aged sixty-three, in whom soft



vesicles, varying in size and filled with a cloudy secretion, occupied the lingual and laryngeal aspects of the epiglottis, the ary-epiglottic folds, and inferior surface of the tongue round the frænum. A larger number had already burst, and were only represented by shreds of epithelium. The acute nature of the occurrence of these vesicles could often be observed from day to day, but their disappearance was much slower. Arsenic was useless in these cases, and only some local anodyne, *e. g.* orthoform, was recommended to allay the very slight dysphagia which accompanied this condition.

CASE OF PERVERTED MOVEMENT OF THE VOCAL CORDS DURING INSPIRATION, ASSOCIATED WITH ATTACKS OF EXTREME SPASTICITY OF THE LARYNX.

By DR. EMIL GLAS.

The patient was a man, aged sixty, of a very irritable nature, who suffered from repeated attacks of severe dyspnoea, sometimes even at night, which were undoubtedly to be regarded as due to a spastic condition of the larynx, and which corresponded with the results obtained on laryngoscopic examination. Thus, if the patient were asked to take a deep breath a spasm of the adductors ensued which lasted a long while, and this phenomenon could also be artificially provoked by touching the cords with a probe. Such attacks occurred as very early symptoms in tabes, as the exhibitor had had the opportunity of demonstrating, and were not infrequently associated with paralysis of the crico-arytænoides posticus (laryngeal crises). There was no reason, however, in this case to suspect tabes or tetanus, and he regarded this condition as being due to a hyper-excitability of adductor centres, and which up till now had responded to no treatment.

Dr. KAHLER asked if this phenomenon took place even after the application of cocaine.

Dr. FEIX recalled a case of perverted action of the vocal cords in a young girl, which he had shown some years before at a meeting of this Society. His patient had hysterical stigmata of a different character, but examination of the larynx revealed the same state of affairs as appeared in the case before them. He had adopted breathing exercises under the guidance of the laryngeal mirror, and after a few weeks had reported a cure. Possibly it might be worth while to try this method in the present instance.

Dr. GLAS replied that all attempts to cocaine the larynx had produced such severe attacks that complete local anaesthesia of the

mucous membrane had been impossible. He proposed to commence breathing exercises and also to introduce cocaine by inhalation of a spray, and would report the results later.

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## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

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*Fourteenth Annual Meeting, held at Pittsburg, Pa., May 28, 29, and 30, 1908.*

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DR. EWING W. DAY, *President, in the Chair.*

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*(Continued from page 355.)*

### THE POST-OPERATIVE EFFECTS OF THE STACKE OPERATION.

BY DR. JAMES F. MCKERNON (New York City).

THE indication for the radical operation was the presence of dead bone in the tympanic cavity. It was unwise to perform the operation on account of a discharge from the middle ear of a few weeks' or months' duration, and where no dead bone could be demonstrated. In discussing the post-operative effects of the Stacke operation the question of percentage of recurrences was an important one. Fully one quarter, according to the author, of the total number operated upon lapse into the recurrent class, and yet many operators claim only 4 or 5 per cent. of recurrences. The cause of recurrence was not always a failure to remove all the dead bone, though frequently such was the case, but many times the failure was due to faulty technique in dressing after the patient was discharged from the hospital. The importance of expert attention in the matter of after-care was strongly emphasised. Another cause of recurrence was the omission properly to rim out and remove all diseased tissue at the tympanic orifice of the Eustachian tube. A still further cause, acting by way of the Eustachian tube, was the extension of infection, in patients who easily contract colds, from the tube to a mass of new scar-tissue lying over the tube, with the result that this becomes broken down, a direct communication being once more established between the tympanic cavity and the pharynx. The cause of this extension was in large measure adenoids in the naso-pharynx. The effect of the operation upon audition was perhaps the most important point to

the patient, and should be frankly discussed with him. The author had only seen one case where the hearing was permanently improved following the operation, and he did not believe that permanent improvement resulted in the majority of cases. The supposed brilliant results in this regard were obtained in cases where there was no dead bone, and where recovery would have taken place by a more conservative method of procedure. In the vast majority of cases, at the end of six months or a year, the hearing for all practical purposes, particularly for conversation, was lost. Tinnitus was temporarily improved in a certain proportion of cases, but after a substantial mass of scar-tissue had re-formed this symptom returned, though not to such an extent as before. Pain was relieved in almost every case. Vertigo, when caused by pressure and not by labyrinthine disease, was invariably relieved. Nausea and vomiting, as well as unsteadiness of gait, were relieved unless the labyrinth is involved. The mental symptoms were also relieved. Facial paralysis, which occurs in the majority of cases, was transient. Bilateral invasion occurred in some cases, and this was given as one of the reasons for the operation. The cosmetic results of the Stacke operation were always good. In the average case there was complete dermatisation in from six to seven weeks from the time of operation. The question of mortality following this operation was a difficult one to reach, but that deaths do occur no one engaged in the work could doubt. The prognosis should be more guarded than it usually is. There was no more delicate, difficult, and tedious work in the whole domain of surgery than this, and no operator should undertake it without having previously obtained experience by work upon the cadaver.

#### CHRONIC RECURRENT SUPPURATIVE OTITIS MEDIA AND ITS RELATION TO MASTOID INTRA-CRANIAL COMPLICATIONS.

DR. S. MACCLEN SMITH, of Philadelphia, in this paper emphasised the fact that intermittent ear-discharge is relatively productive of more complications, intra-cranial and otherwise, than the continuous variety, though the idea still persists, both among the profession and in the laity, that an aural discharge which is intermittent is of little importance, the assumption being therefore that the underlying disease is never dangerous to life. This would lead to the belief that the pathology and prognosis of these conditions are not generally understood. In this connection he emphasised the value of prophylaxis as applied to mastoid and intra-cranial

involvement complicating acute tympanic disease. In order to illustrate the destruction that frequently accompanies a recurrent suppurative otitis media, the histories of three typical cases recently operated upon by him were briefly detailed. Of seventeen mastoid operations performed by the author in six consecutive days, seven were of the recurrent variety. All showed extensive bone destruction, exposing either the sinus or dura, or both. Two led to the evacuation of pus from a temporo-sphenoidal abscess, through the mastoid antrum route, and one assumed the Bezold's variety of mastoid disease. The previous duration of the disease ranged from twenty-seven months to thirty-one years. Acute exacerbations occurred in two cases about every two months, and in the others about every two years or more. In all these cases the acute exacerbations were complications of influenza. Of about one hundred mastoid operations recently performed, twenty-one were of the recurrent variety. Recurrent cases might remain quiescent for some years.

Examination of the blood was often an important link in the chain of symptoms leading to the diagnosis of a septic process, but this examination must consist of the differential leucocyte count as distinguished from merely determining the presence of hyperleucocytosis on the one hand, or leukopenia on the other. Repeated blood-cultures should be made in order to determine the special micro-organism present. In cases of recurrent suppurative otitis media, during the stage of apparent inactivity, it might be possible by an examination of the blood to demonstrate that a retrogressive metamorphosis was in actual progress. The value of such findings would at once become apparent if thereby such conditions could be appreciated, even in the absence of certain localising symptoms.

Dr. WILLIAM H. HASKIN, of New York City, was opposed to the indiscriminate performance of either the Stacke or the Schwartz-Stacke radical operation. The radical operation was frequently performed for discharge, and in the majority of these cases subsequent examination would show that the discharge was not cured. In many cases there was discharge due to tubal moisture, but he did not believe tubal moisture should be considered in deciding whether or not to perform the radical operation, as this could be cured by applications of nitrate of silver or other measures. The operation of Stacke, pure and simple, was really called for and should be performed only when definitely indicated. He agreed with Dr. McKernon with regard to hearing being only temporarily improved. Tinnitus was increased rather than decreased in the

majority of cases. Otologists were not always honest in their reports concerning facial paralysis. It should not be said that these cases would recover after six weeks or two months, as a large proportion of them remained, at least, partially paralysed. Reports with reference to fatalities were also absolutely false in many instances. The radical operation was followed by death in a great many cases. As far as the cosmetic effect was concerned, large plastic operations upon the concha should be decried, the results being no better than those attending a less radical operation.

Dr. H. HOLBROOK CURTIS, of New York City, asked if, by the Stacke operation, was meant the radical operation.

Dr. STEPHEN H. LITZ, of Brooklyn, said many other cases returned to other clinics after being operated on in the various hospitals and discharged as cured, to be treated for discharging ears. He cited the case of a patient who had been operated on eleven times and "cured" twice, in New York and England, who still had a discharging ear. He agreed with Dr. Haskin regarding hearing, tinnitus, and facial paralysis. He also agreed that more deaths from radical operation occur than are reported. He deprecated the practice of telling patients that the operation is a simple one, which was certainly not true. He had had forty-four of these cases. Out of that number fourteen were complete cures; sixteen still had some discharge, but refused further operation; four had recurrent discharge, but refused further operation; four were re-operated three or four times and cured; two died—not from operation—one by accident; the second died two or three years afterwards from diphtheria; four cases disappeared before treatment was completed.

Dr. W. SOMMER BRYANT dealt with the occurrence of complications in the various forms of suppurating ears. In a paper entitled the "Management of Suppuration of the Middle Ear Based on an Analysis of a Series of One Hundred Consecutive Cases Seen in Private Practice," read before this Society at the last annual meeting, he showed that mastoid complications occurred in 20 per cent. of the cases of chronic recurrent middle-ear suppuration, in 25 per cent. of perennial chronic suppurative cases, in 46 per cent. of all forms of chronic suppurative cases combined, in 66 per cent. of simple chronic suppurative cases, and in 71 per cent. of the acute suppurative cases. He had again gone over the record of this series of cases, and found that the data gave the following approximate figures relative to the proportion of mastoiditis. The length of time of the suppuration, the number of mastoid cases and their

duration, compared, gave the following figures for the frequency of mastoid involvement in the various forms of ear suppuration, as these existed in the community, and also the proportionate probability that any one given case had, or would have, mastoid symptoms. He found that in the perennial suppurative cases 1 in 2920 had mastoiditis; in all classes of chronic middle-ear suppurative cases 1 out of 1432 had symptoms of mastoiditis, and in acute suppuration 1 out of every 4 cases had symptoms of mastoiditis; in the recurrent chronic cases 1 in 1217 cases had mastoiditis; and in the simple chronic cases 1 in 164 cases had mastoiditis. These figures showed that acute suppuration was 41 times more likely to be accompanied by mastoid symptoms than simple chronic suppuration was. Also that simple chronic suppuration was 7 times more likely to develop mastoid symptoms than recurrent chronic suppurative cases were; and that chronic recurrent suppurative cases were  $\frac{1}{16}$  times more likely to develop mastoid symptoms than all chronic suppurative cases combined; and that all chronic suppurative cases combined were twice as likely to develop mastoid symptoms as perennial suppurative cases were which had lasted over ten years; and that recurrent chronic suppurative cases were  $2\frac{2}{5}$  times more likely to develop mastoid symptoms than perennial suppurative cases. There were two reasons why the recurrent type of chronic purulent otitis media was more likely to be complicated than the perennial type: First, because in reality the suppuration does not stop but becomes blocked in cases not under expert observation; therefore the infection seeks other outlets than the meatus; and second, because by his classification many of these cases really belonged to the simple chronic type. They had seen that the simple chronic type was very subject to complications. In regard to intra-cranial complications, 11 per cent. of his series were affected; 8 per cent. of an inflammatory nature. The inflammatory cases distributed themselves as follows: No cases occurred in the recurrent variety of chronic suppuration; 8 per cent. of the perennial, 9 per cent. of the simple chronic, and 10 per cent. of the acute cases had inflammatory intra-cranial complications. This was exactly the same order of frequency as for the frequency of mastoiditis. They would naturally expect to have most intra-cranial complications where they had most mastoiditis. The final conclusion was that the longer the suppuration lasted without mastoid symptoms, the less likelihood there was of the appearance of such symptoms. In the acute cases resistance was least, but it increased with the continuance of the inflammation.

Dr. GEORGE A. LELAND, of Boston, agreed with Dr. Smith concerning the seriousness of chronic discharging ears. These cases should be treated by the aurist, and not by the family physician. In many instances mastoid involvement following colds or infections, external or internal, would be early recognised, *i. e.* before manifestations of the usual symptoms or the onset of, perhaps, fatal complications, or would be obviated by the maintenance of proper ventilation and drainage through the natural channels. Recurrent infection was often not diagnosed because of the absence of a marked discharge from the ear, the subjective symptoms noted being slight fever, malaise, aprosexia, symptoms of malaria, etc. In the presence of large perforations, especially, there was danger of infection from bathing in impure water, and such ears should always be protected in bathing by a plug of non-absorbent cotton. With reference to complete exenteration, he took exception to some of the statements made, saying that he had yet to see a death caused by the operation. Some patients may have died *after* the operation—one from nephritis, for example, which was not suspected at the time. He had seen no cases of meningitis. He had not seen tinnitus increased, but, on the contrary, frequently diminished, and the hearing had often much improved, not only where one, but where both ears had been exenterated.

Professor JAXSEN, in discussing Dr. McKernon's paper, said: By the Stacke operation was understood, in Germany, the exposure of the tympanum by way of the attic. Usually the radical exposure from behind was done. It was not proper to compare the time of healing, indiscriminately, in cases of radical operation. The cases were too varied. For instance, a case where the disease was limited to the antrum could not be compared with one where there was extensive involvement of the labyrinthine wall. Furthermore, it was of great importance to note the localisation more accurately. The structure of the tympanum was of great importance. Healing was retarded where there was a deep recessus hypo-tympanicus or retro-facialis, in which pockets easily formed. Through careful exposure and smoothing down of these recesses he had often achieved rapid healing after a radical operation. In cases of disease of the labyrinthine wall there was often disease of the cochlea. Apart from this complication and tuberculosis, the Thiersch skin-transplantation shortened the time of healing. The most favourable time for the performance of skin-grafting was immediately after the operation, or at the first dressing, several days later, but he had also had good results when it was done ten

to fourteen days later. In some cases, in spite of the Thiersch graft, the cavity did not epidermatise; a slightly thickened membrane, with red, moist surface, slightly granular and firm, covered the bone, and remained unchanged for years. The epidermis did not push its way over it. In these cases the underlying bone was diseased, usually becoming so during the after-treatment. This red membrane must be removed, as well as the diseased bone, down to healthy bone. Facial paralysis often disappeared after six to nine months, and even after a year. It was usually due to an error of technique. The causes of aggravation of symptoms and death following an operation were: (1) A latent labyrinthine involvement passing into the active stage. Through Bárány's method we could now determine before the operation whether the latent form was present. (2) An injury of the normal labyrinth, followed by infection, which was not very uncommon. (3) An infection of the wound, which was rare. As these three causes could be excluded by care, the operation might be considered as without danger. In regard to functional results, where there had been poor hearing he had seen considerable improvement. Where there was very good hearing, however, there was usually a diminution. The ossicles were often normal, as well as the corresponding portion of the tympanic cavity. In such cases, provided there was good hearing, the membrana tympani and ossicles should be preserved, in other respects, of course, conforming to the rules of the radical operation. Granulations often disappeared after thorough exposure and drainage of the surrounding parts. This often occurred in the case of the large granulations covering the ossicles, and in their place a thin, transparent membrane appeared. It was possible in this way to expose the upper part of the attic, and even (although this was difficult, and not always necessary) to smooth down the tegmen tympani. The lower, posterior portion of the tympanum could also be exposed if necessary. He had published this radical operation, with preservation of the membrana tympani and ossicles, in 1893 or 1894, at the meeting of the German Otological Society, and since then had operated on 150 to 200 cases after this method among a total of several thousand radical operations. The functional result was often excellent, although the after-treatment was often protracted. In some cases it was necessary to remove diseased ossicles later. It was absolutely essential for the joint between the long process of the incus and the stapes to be intact. About one and a half years ago Mr. Heath, of London, published this operation as devised by him, at a time when, in Germany, a



large number of otologists had a series of such operations to show. The operation had been devised, not by Mr. Heath, but by the speaker, and he could not concur in what he considered the too enthusiastic recommendation of the operation by the former.

Dr. WENDELL C. PHILLIPS, of New York City, held that regardless of its post-operative effects the Schwartze-Stacke operation was absolutely necessary in certain cases. No surgeon would think of allowing a necrotic process in the hip-joint or elsewhere to continue unchecked, and so it should be with the ear and mastoid process. In the presence of undoubted bone necrosis in this region one must take the chances as to post-operative effects, which, to be sure, were not always what might be desired. An indication, not mentioned by the previous speakers, had always required operation in his experience, viz. atresia of the canal associated with the purulent process. A chronic necrotic process in the middle ear demanded operation because of the presence of necrotic bone, which should be removed by surgical interference, not for the improvement of hearing. The patient should be made to understand that the improvement of hearing is not necessarily concerned. He did not agree with Dr. Leland with reference to mortality following this operation. Death was undoubtedly sometimes caused, or at least hastened, thereby.

Dr. S. J. KOPETZKY, of New York City, emphasised the importance in the study of recurrent mastoiditis, especially after operative procedure, of diagnosing the underlying condition. He knew of no satisfactory statistics which give the results of the radical operation based upon the underlying disease. The majority of published statistics only seemed to take the cessation of the otorrhea into consideration. In other words, the radical operation was judged by the effect it had on a symptom only, and the operation was a failure if the otorrhœa persisted after operation, and was considered a success when the otorrhœa was suppressed, irrespective of whether the disease causing the otorrhœa had or had not been eradicated. His experience showed that in the majority of instances, wherein the suppuration persisted after operation, the otoscopic picture before operation had shown a perforation of varying size which did not encroach upon the annulus tympanicus, in other words, a non-marginal perforation. This finding of a non-marginal perforation he interpreted, therefore, as evidence of a chronic disease of the lining mucous membrane of the middle ear. The radical operation, no matter how thoroughly carried out, did not remove all the diseased membrane, sections of which naturally

remained *in situ* at such points as the oval window and the unapproachable depths of the Eustachian tube orifice. Therefore while the radical operation laid the middle ear open to subsequent after-treatment in cases of disease limited to the lining mucous membrane it often naturally failed to stop the otorrhœa. Such cases should, therefore, be differentiated and not counted as increasing the percentages of failure from the operation. On the other hand, he did not wish to be understood as holding that every non-marginal perforation excluded the presence of bone necrosis. There were mixed cases. In cases where bone necrosis was diagnosed the results from the radical had proved good in proportion as the necrosed tissue was radically removed. The actual disease of the bone, tuberculosis, syphilis, or other disease, which resulted in the necrosis was too often entirely overlooked.

Dr. ROBERT C. MYLES, of New York City, said he had been searching the literature for whatever evidence he could find upon the subject under discussion, and Dr. McKernon's paper was the first to give the positive and negative results of the operation in a clear-cut manner. A great deal was heard of the good results of the Schwartze-Stacke operation, but the evil ones were as yet untabulated. It was time correct statistics were forthcoming, and Dr. McKernon had probably given the first definite report.

Dr. FRANK ALLPORT, of Chicago, had no doubt that death occurred sometimes as the result of the radical operation, but believed that such occurrences were extremely infrequent. All operations were subject to fatalities, but this should not deter the surgeon from operating when surgical procedures seemed advisable. There was no other way of handling cases of deep-seated necrosis of the temporal bone. The only thing for aural surgeons to do was to improve their technique and go on with the work. Reference had been made to the continuance of discharge after the operation. He had taken great comfort from the paper written by Dr. Dench some years ago on this subject, and had come to the same conclusion arrived at by him. The skin which lines the mastoid cavity after the mastoid operation is thin and poorly nourished, and frequently throws out a deposit on its surface, which macerates and becomes unhealthy and purulent. In such cases the cavity should be thoroughly cleaned and soaked with bichloride solution, alcohol, or something of this nature, and this should be repeated from time to time, keeping the parts clean and healthy until the skin is able to take care of itself. It had been said that some surgeons performed the radical operation too frequently, but

Dr. Allport did not believe that conscientious surgeons of experience did so. Cases of chronic purulent otorrhœa should, of course, be subjected to proper and intelligent treatment for a reasonable time, and their intractability assured, before a radical operation was performed. Concerning the hearing results after a radical mastoid operation, he believed with others that if the hearing was good before the operation it probably would be impaired by the operation, whereas if the hearing was poor before the radical mastoid operation it would probably be improved by the operative procedure. He believed that in a large majority the hearing was either improved, or at least not injured, by the operation.

Dr. NORVAL H. PIERCE, of Chicago, cited two cases of death resulting directly from operation. In one case when he went into the antrum he uncovered, but apparently did not injure, the dura. The patient died from general septic meningitis. Autopsy showed that the labyrinth was intact. The route of invasion was unknown. In the other case he accidentally uncovered the external semi-circular canal to the extent of not more than a pin-head. The patient had some dizziness immediately following operation, but improved greatly in the course of the next week, and the bad symptoms did not become manifest until the packing had been permanently removed. About ten days after operation septic meningitis suddenly developed and the patient died. *Post-mortem* examination showed septic inflammation of the meninges which had found its way through the internal auditory canal. Whether, in the first case, death was due directly to the operation or was merely coincidental he could not say, but in the second case it was undoubtedly traceable directly to the operation. With reference to the influence of the radical operation upon hearing, all were more or less remiss in the matter of examining these cases previous to operation. Operation did not make the hearing worse. Half of his cases had been carefully examined, and the majority of these heard as well as and in some instances better, than before operation. A large number, however, heard distinctly worse.

Dr. J. A. STUCKY, of Lexington, Ky., said that it was better to operate a day too soon than an hour too late. He was loth to believe that any otologist would do a radical operation upon a patient so long as there was reasonable ground for thinking a cure could be effected without operation. Operative treatment was frequently unsatisfactory because of failure to give thorough drainage. He was surprised at the percentage of failures reported by Drs. Smith and McKernon. In more than a hundred cases where

tinnitus existed, it was usually relieved or markedly benefited by operation. He had had no deaths attributable to the operation, nor had he had any cases of permanent facial paralysis due to the operation. The hearing was made no worse in any case, but in five cases it was markedly improved. He had no explanation to offer on this point.

Dr. JOSEPH BECK, of Chicago, had carefully tested the hearing before and after the radical operation, and he had uniformly found that the hearing for conversation was lessened. These patients could always hear the watch test, but could not understand when spoken to. He had also investigated facial paralysis following the radical operation, and had found that many cases of facial paralysis recorded were not due to injury of the facial nerve but to neuritis. The time of appearance of the paralysis was important. When it appeared slowly it was not of so much importance as that which was noticed immediately after recovery from the anæsthetic.

Dr. McKERNON, in closing the discussion, said, in reply to Dr. Haskin's remarks, that in a large proportion of adult cases the Stacke operation was sufficient and not the Schwartz-Stacke. In young adults and children it was important that the mastoid process be explored at the time the radical operation was done. He did not agree with Dr. Haskin that it was rarely necessary to do the Schwartz-Stacke operation. He did not, however, wish to be understood as opposing the Stacke operation whenever the indications therefor were definite. In the event of dead bone present in or adjacent to the tympanic cavity the latter operation should be resorted to. Dr. Leland and Dr. Bryant had found tinnitus to be lessened; this had not been his experience. In a certain proportion of cases it had been lessened, but where there was a formation of scar-tissue in and around the oval window it had been increased. Referring to Dr. Jansen's remarks about the tubercular manifestations, he said five of the cases reported had tuberclosis of the middle ear at the time of operation, whether as the result of injury during, or of infection following, operation, he was unable to say. Replying to Dr. Stucky's remarks concerning audition, all his cases had been given a functional test following operation, and at intervals for two years thereafter, so that the speaker could give a definite statement regarding the cases which had come under his personal observation. Dr. McKernon outlined the after-treatment as follows: After complete removal of every vestige of the disease the cavity was packed either with plain or iodoform gauze, the latter being used when the dural area

was exposed, in other cases the former. If there was little or no moisture from the canal this packing was removed at the end of the third day, otherwise at an earlier time. After removal of the dressing the surface was powdered over and covered with plain sterile gauze. After the third dressing no more gauze was packed in. The stitches were removed at the end of the fourth day.

Dr. SMITH, in closing the discussion, said that the majority of recurrent cases would have a recurrence every few weeks, while others would not suffer from an acute exacerbation for some years. Patients of the latter class had heretofore been looked upon as of little or no importance, yet these cases, in his opinion, showed more carious destruction of bone and more frequent exposure of the underlying structures, more especially the sinus and dura, than was found in a given number of patients suffering from a continuous form of discharge. Dr. Smith was surprised to find that, in the experience of some of the Fellows, the death-rate had been so high, and felt that the same must be the result of patients being virtually in a moribund condition, due to some intra-cranial complication, before being subjected to operative interference, as he considered that conservatism was best served by advising an operation in the great majority of all chronic suppurative diseases of the ear, either of the recurrent or continuous variety, when the adoption of more simple means had failed to bring about a cure. In regard to the continuation of a mucous secretion from the ear following a mastoid operation, this was practically always due to failure to close the tympanic orifice of the Eustachian tube at the time of operation. It was, however, a matter of little importance, except from an æsthetic point of view, from the fact that the operation had relieved the subject from all danger so far as life was concerned. Furthermore, it was easy to close subsequently the tympanic orifice of the Eustachian tube under cocaine anaesthesia through the external auditory canal. This was best accomplished by the use of Allport's burrs. In cases with good bone-conduction, where the hearing was fairly good before operation and had been impaired as a result of it, he believed the loss of hearing to be due to an exudate thrown out about the oval and round windows and to the formation of adhesions resulting from the same, whereas when the hearing had materially improved after the operation this probably could be accounted for from the fact that certain adhesions, the result of a former exudate, had been removed at the time of operation, with consequent liberation of the stapes and removal of the obstruction covering the round window.

## FRENCH CONGRESS OF OTO-RHINO-LARYNGOLOGY.

*Held on May 10, 1909, at Paris.*

DR. LAVRAND, of Lille, President, in the Chair.

(*Abstract of Proceedings translated by MR. H. CLAYTON FOX.*)

*Deafness and Nasal Obstruction.*—M. BRINDEL (Bordeaux).

NASAL respiratory trouble induces or aggravates auricular lesions, whatever be their nature. Re-establishment of the calibre of the nasal fossa frequently improves, sometimes radically cures otitic lesions (deafness and tinnitus). These auricular troubles are quite explicable in their usual manifestation and recrudescence, by the community of origin in the blood supply of the inferior turbinated body and middle ear. The variability of auditory troubles in the subjects of nasal obstruction probably arises from the relationship of the tubal orifice with the posterior end of the inferior turbinated body.

*Sarcoma of the Nasal Fossa.*

M. FURET (Paris) relates the history of a woman, aged thirty-eight, who in good general health presented a large sarcomatous tumour in the left nasal fossa, which was entirely removed by Moure's operation without unsightly disfigurement.

M. CABOUCHE (Paris) particularly insists on the following technical points: Preliminary tamponning of the epi-pharynx, preservation of the mucosa up to complete resection of the ascending process of the superior maxilla and nasal bone. Systematic exploration of the adjoining cavities with a view to detect concomitant sinusitis.

*Tubercular Tumours of the Nasal Fossa.*—M. F. CHAVANNE (Lyons).

In connection with a case of tubercular tumour of the septum the author considers the question of tuberculosis of the pituitary membrane generally, and arrives at the following conclusions:

(a) The classical description of tuberculosis of the pituitary membrane is established, and one can legitimately distinguish two chief varieties of it: (1) Miliary tuberculosis; (2) chronic tuberculosis represented here by the special clinical type, which is lupus.

(b) The growths described under the name of "tubercular and

lipoid tumours of the nasal fossa" correspond to one and the same lesion, and are a species of lupus resembling other nasal varieties of this affection; they are almost always primary. Like them, again, their appearance may be heralded by the existence of a pre-bacillary ozænatous rhinitis, a form of atrophic rhinitis, which is sometimes the initial stage of lupus.

*Some Cases of Radical Cure for Chronic Maxillary Sinusitis, Operated by the Nasal Route.*

M. MAHU (Paris) reports five cases of sinusitis operated by his procedure (vide *La Presse Médicale*, February 12).

Whatever may be the method employed for radical cure, he draws attention to the following points: (1) The necessity of establishing a sinuso-nasal communication sufficiently large to ensure that it may remain permanent; (2) the importance of complete curettage of the fungous cavity.

*Maxillary Sinusitis by the Nasal Route.*—M. VACHER (Orleans).

The important points in the author's technique are intervention without general anesthesia, enlargement of the opening of the nasal fossa, respect for the greater part of the inferior turbinated body, attacking the wall in its whole extent to the level of the floor, curettage of floor only when examination reveals fungosities.

*Foreign Bodies of the Oesophagus (Oesophagoscopy).*—M. MOURE (Bordeaux).

Without disputing the advantages of oesophagoscopy, the author reports some cases where it was inapplicable, useless, or dangerous. In one case he had recourse to Kirrmisson's hook, and in another to external oesophagotomy.

*Matters concerning Tracheo-Bronchoscopy.*—M. GUISEZ (Paris).

Direct laryngoscopy offers certain definite indications for the cure of laryngeal polypi. When they are subglottic and seated quite anteriorly in the larynx it is very difficult to reach them without injuring the vocal cords if one deals with them by indirect laryngoscopy. On the contrary, in direct laryngoscopy the spatula acts as a retractor, protects the vocal cords, and allows direct access to the growth. Guisez has been able to extract several polypi which had escaped the mirror and one subglottic, for which laryngo-fissure had been suggested. In the case of children, where examination with the mirror is impossible, exploration with the

spatula is alone appropriate for inspecting and operating on the larynx.

*Cicatricial Structures of Exceptional Character.*—M. GUISEZ.

*Contribution to Œsophagoscopy, Retrograde Œsophagoscopy, Dilatation, Endoscopy after Low Cervical Œsophagostomy in the Treatment of Grave Cicatricial Stenoses, Thoracic, and difficult of Access.*

M. SARGNON (LYONS) has observed a large number of œsophageal cases, especially one of cervical neoplasm with glandular involvement, and a large bone in the laryngo-pharynx removed by direct endoscopy. He extols inferior gastroscopy and especially retrograde œsophagoscopy, which enables one to localise, and often at once to deal with low cicatricial stenoses. In incurable cases, even by the endoscopic method, he advises low cervical œsophagostomy and dilatation endoscopically by this route, which affords facility for permanent dilatation without danger to the lungs.

*Œsophagoscopy and Electrolysis in a Case of Œsophageal Stricture.*—GAULT (Dijon).

Œsophagoscopy was performed in a patient suffering from stricture of the œsophagus. A tube 9 mm. was introduced, and allowed one to observe two strictures, which were easily passed by the tube. But it was impossible to get through the third, situated in the cardiac portion. At a subsequent *séance* one tried passing a tube of 9 mm. in order, with better illumination, to discover an opening at the seat of the third constriction; this trial failed. A tampon soaked in adrenalin 1 in 1000 was then introduced, and immediately afterwards one could pass bougies of increasing calibre. At the same sitting electrolysis was practised on the third stricture, the only one which had recurred.

The cure has since been maintained.

*Exhibition of Stereoscopic Autochrome Photographs of Anatomical Studies.*—M. GAREL (LYONS).

*Some Disadvantages of Submucous Resection of the Septum.*—M. MERMOD (Lausanne).

*Treatment of Malformations of the Septum Nasi by Submucous Methods.*

MM. ROUVILLOIS and SIEUR (PARIS) insist on the advantages of



submucous resection, not only in case of very marked deviation, but in the removal of crests and spurs which frequently accompany these deviations.

*Pathogenesis and Treatment of Ozaena.*—M. LAVRAND (Lille).

By ozaena one understands a nasal affection characterised by the symptomatic tripod, sickening odour (*sui generis*), grey or green crusts, and total atrophy (mucosa and bone).

The secretions in ozaena of medium intensity, not treated, are limited to the middle meatus. Systematic examinations with the probe have always revealed to the author a necrosing ethmoidal osteitis in the depths of the middle meatus. The viscid secretions are converted into crusts by desiccation. The atrophy arises from a local trophic neuritis. Treatment: curettage of the osseous lesions.

*The Present Position of Laryngostomy.*—SARGNON (Lyons).

Discussing this question, the author pointed out that the practice of laryngostomy has extended to Belgium, Italy, England, America, and Russia. At present he has statistics of eighteen cases, with a slight mortality and excellent respiratory and even vocal results. Up till now there is a total of seventy-two cases of laryngostomy recorded.

*Nodular Formations of Glandular Origin in Nasal Polypi.*

M. LANNOS (Lyons) has three times met with (in nasal polypi) small, hard, white, spherical structures resembling a fried fish's eye. The histological examination, as one may deduct from the drawings shown, demonstrates that it concerns cysts of glandular origin, the contents of which have not remained fluid, but have undergone a special metamorphosis.

*Cystic Nasal Polypi giving rise to Copious Recurrent Discharges of Mucus and appearing from their Structure to Originate in the Maxillary Antrum.*—M. VOILLET (Paris).

On two points Voillet is at variance with Killian; this authority states that the cyst is not lined with epithelium and is of the opinion that these polypi do not recur. Histological observations demonstrate to the contrary, and in the case in question the polypi have recurred five times.

*Acute Form of Sinusitis.*—M. RIVIÈRE (Lyons).

Certain varieties of acute sinusitis are neglected because their

symptoms are confused with those of the causal affection. The author lays stress on œdema of uvula and palate, filling of the rhino-pharynx with muco-pus, and meningeal complications, which may manifest themselves in the course of these conditions.

*Intra-cranial Evolution of Naso-Pharyngeal Fibroid Polypi.*—M. GAUDIER (Lille).

*Apròpos* of the case of a child operated on two years previously for naso-pharyngeal fibroma situated in the sphenoidal sinus, with multiple prolongations, removed after resection of the superior maxilla, and where death ensued from erosion of the right cavernous sinus, by extension of the growth through the cranial base, Gaudier thinks that this ill-understood complication of naso-pharyngeal fibromata demonstrates that it may be more common than one thinks, and that to guard against it *effectively* the fibroma must be attacked in the most radical manner, beginning with resection of the jaw. On the other hand, this experience ought to be taken into account in the final prognosis of the operative treatment of naso-pharyngeal fibromata.

*Streptococcal Ulcer of the Soft Palate.*

Inspection reveals a central ulcer of the soft palate encroaching on its free border, circular in outline, about the size of a franc, its base flat, slightly mammillated, without false membrane or slough; edges neither undermined nor raised, but cleanly cut. Reactionary areola bright red. One made a provisional diagnosis of sporotrichosis, and administered iodide of potassium. Recovery took place in a month. Bacteriological examination revealed, in pure culture, an encapsulated streptococcus, which Klava has described as the *Leuconostie hominis*, and to which this authority, who has discovered it in different situations of the alimentary canal, believes one must assign some accidental pathogenetic capacities.

*Direct Prosthesis for Palato-Pharyngeal Adhesions.*—M. KOENIG (Paris).

Exhibition of a patient operated for palato-pharyngeal synechie. The ingenious apparatus constructed by Delair was immediately adjusted, and gave most perfect euphonic results.

*On the Gravity of Peritonsillar Phlegmons.*

This phlegmon constitutes a morbid entity of exceptional

gravity. It commences as an ordinary sore throat, followed by the production of an inflammatory swelling, and may develop as a malignant diphtheria. The author reports the case of a patient who succumbed from cardiac failure preceded by intestinal hæmorrhages.

*Submerged Tonsils with Adhesions to the Pillars in the Adult.*—M. TRÉRÉOR (Antwerp).

Chronic inflammation of the tonsils with adhesions may simulate tuberculous. The treatment is exclusively local, and consists in radical extirpation of the tonsils after liberating the adhesions.

*Calculi of Wharton's Duct.*—M. MALHERBE (Paris).

Calculi of Wharton's duct without known cause may give rise to true salivary colic. They induce acute recurring inflammatory attacks of the sublingual serous bursa, whence the appearance of an acute ranula.

*On Endoscopy.*—M. MUNCH (Paris).

Brings a new contribution to the illumination of the œsophagus and bronchi.

R. LEROUX.

(To be continued.)

## “MONATSSCHRIFT FÜR OHRENHEILKÜNDE UND LARYNGO-RHINOLOGIE” (YEAR 43).

With the year 1909 a new series of the *Monatsschrift* commences. Prof. Chiari takes the place of the late Prof. von Schrötter on the editorial committee, whilst the names of Dr. Otto Kähler and Dr. Ernst Urbantschitsch are added as secretaries, the former for matters relating to laryngo-rhinology, and the latter for otological subjects. The rearrangement of the contents is perhaps well explained in the alteration of the original title, *Monatsschrift für Ohrenheilkunde sowie für Kehlkopf-, Nasen-, Rachenkrankheiten*, to *Monatsschrift für Ohrenheilkunde und Laryngo-Rhinologie*. These twin specialities each now occupy an equal portion of the journal, to the first of which is assigned accounts of work in connection with the throat and nose, and the remaining half is devoted to otological matter. Though the bulk is increased necessarily the quality is in no way depreciated, and the alteration makes the journal even more valuable than before.

## Abstracts.

## PHARYNX.

**Blumenfeld, F.** (Wiesbaden).—*The Adenoid Ring and Intra-thoracic Glands.* "Zeitschrift für Laryngol.," vol. i, Part IV.

As a result of a number of observations the author has reached the conclusion that the tendency to catarrh of the lower air-passages, which sometimes persists after the removal of adenoid growths, is due to disease of the intra-thoracic lymph-glands. He discusses the relative usefulness of the various methods of detecting disease of these glands, and among others radiography, which he considers of important confirmatory value. The nineteen cases upon which his observations are based presented the combination of hypertrophied pharyngeal tonsil, enlarged cervical glands, and enlarged and presumably tuberculous intra-thoracic glands. He believes that in such cases the path of infection is a downward one *via* the lymphatics, the point of entry being the pharyngeal tonsil. He is further convinced that the deformity of the chest which is associated with adenoid growths is to be attributed less to obstruction of the upper air-passages than to respiratory and trophic disturbances caused by concomitant enlargement of the intra-thoracic glands. *Thomas Guthrie.*

**Sack, N.** (Moscow).—*Some Remarks on Sir Felix Semon's Article on Pneumococcal Infection of the Throat.*

**Ruprecht, M.** (Bremen).—*Concerning Pneumococcal Infection of the Throat.* "Monats. für Ohrenheilk.," Jahrg. 42, Heft 10.

These are two critical reviews of the account published last year in the *Monats. für Ohrenheilk.* by Sir Felix Semon respecting a case of a gangrenous affection of the throat. Dr. Sack discusses the conditions which obtained in the case reported by Sir Felix, and refers the reader to an account of what he thinks must have been a similar case which came under his own observation and which he described in the *Monats. für Ohrenheilk.*, Nr. 8, 1904. He considers that these cases belong to a distinct class by themselves which hitherto has not been differentiated from other severe infective lesions of the throat, and regards them as being dependant on some form of mixed infection, one element of which is most probably syphilis and the other the pneumococcus. In conclusion he quotes from his article of four years ago in support of his view, as follows: "We doctors are in the habit of regarding lesions of the throat as the result of only one disease, but we should not forget that two quite distinct pathological processes may affect the mucous membrane simultaneously, as indeed occurs in the case of the skin, and that lesions produced by such a dual infection may render the condition most obscure and the diagnosis most difficult."

Dr. Ruprecht considers that the lesion may have been the result of the pneumococcus taking on a pathogenic phase, though according to him it often is found in the throat as a non-infectious organism and appears frequently in "throat cultures." He urges, however, for this latter reason that this explanation of the case should be accepted with reservation, and hopes that experiments in this direction will be made on animals with the view to the further elucidation of this question.

*Alex. R. Tweedie.*

## NOSE.

**Müller, F.** (Heilbronn).—*Frontal Headache of Dental Origin.* "Münch. med. Wochn.," February 2, 1909.

The writer describes a case in which he removed an enlarged pharyngeal tonsil and the anterior extremities of the middle turbinals, and also treated the neighbourhood of the infundibulum, but without giving any relief to the headache. The pain developed in front of the left ear and left cheek, apparently in the region of the auriculo-temporal nerve. The dental surgeon found caries of the first upper left molar and of the first lower left pre-molar; when they were treated the pain entirely disappeared.

*Dundas Grant.*

**Kelly, A. Brown.**—*Naso-antral Polypus.* "Lancet," January 9, 1909.

Since the publication of Killian's paper in 1906 the author has seen 15 cases of this form of growth, in 11 of which the connection of the lining membrane of the antrum with the polypus was demonstrated. He briefly describes in this paper the prominent features and treatment of each case. Of the 15 cases, 10 were under twenty years of age, the youngest being five. The remaining 5 were from twenty-three to thirty-five years. There were 7 males and 8 females. Snoring and thick speech were invariable symptoms; one boy, aged nine, had enuresis, which was coincident with the marked nasal obstruction and disappeared on its removal. Details of the effects of transillumination are given. As regards treatment, however the polypus is caught, it should be torn away and not cut through. Owing to recurrence in 7 out of 15 cases Kelly now prefers to open the antrum, determine the intra-antral attachments of the growth, and completely remove these together with the polypus.

*Macleod Yearsley.*

## LARYNX.

**Meyer, A.** (Berlin).—*Leukæmic Changes in the Larynx.* "Zeitschr. f. Laryngol.," vol. i, Part III.

The case here described was that of a painter, aged forty-nine, who had repeatedly suffered from lead colic. Dyspnoea and hoarse cough had been noticed during the last three months. Examination of the larynx showed several small flat swellings, apparently consisting of adenoid tissue, on the ary-epiglottic folds. In the subglottic region were two exactly symmetrical thickenings of the side walls of the larynx, which caused great narrowing of the lumen. The swellings were pale greyish-red in colour; they were covered with smooth mucous membrane and felt fairly hard on examination with the sound. An examination of the blood and the discovery of numerous enlarged lymph-glands established the diagnosis of lymphatic-myelogenous leukaemia. In spite of intra-muscular injections of atoxyl the subglottic swelling increased and tracheotomy was performed. This was followed by suppuration and broncho-pneumonia, to which the patient succumbed. The two principal changes revealed by *post-mortem* examination of the larynx were the following: (1) Great symmetrical thickening of the subglottic mucous membrane so as to form two thick and fairly firm cushions separated by a groove from the cords above; this condition has been observed in other cases of leukaemia and rarely also in pseudo-leukaemia. (2) Marked increase in size of the already ossified cricoid cartilage, owing to the development of a medullary cavity in its interior. A similar condition has not been previously recorded.

*Thomas Guthrie.*

**Moure, E. J.** (Bordeaux).—*The Tracheo-laryngeal Operation Wound in Carcinoma of the Larynx.* "Arch. für Laryngol.," vol. xxi, Part II.

Professor Moure claims to have been one of the first who in the year 1891 advised the performance of laryngo-fissure in one stage and without a preliminary tracheotomy at a previous sitting. At the present day the one-stage operation is almost universally practised, but most operators still consider it necessary to employ either the Rose or Trendelenberg position, or a special cannula such as that of Hahn or Trendelenberg. Owing to the numerous disadvantages of both of these cannulae the author has long ceased to use them, and has devised a special cannula flattened from side to side, which requires a small incision and presses upon and injures the tracheal walls to the least possible extent. The entrance of blood into the bronchi is effectually prevented by packing in gauze above the cannula, and a special position of the patient is thus rendered unnecessary.

Much stress is laid by the author on the advantages of removing the cannula immediately after the operation and carefully suturing both the laryngeal and the tracheal wounds. He has experienced no untoward results from this practice, and believes that it places the patient in the best possible position for withstanding secondary infection of the wound and the lungs, and greatly hastens healing.

Thomas Guthrie.

## EAR.

**Stewart, Charles M.**—*The Surgery of the Auditory Labyrinth.* "Canadian Journ. of Med. and Surg.," January, 1909.

In an academic article upon the surgery of the labyrinth, in which he acknowledges the deep indebtedness which we owe to such men as Richard Lake, J. D. Richards, and Jansen, the writer gives a brief history of four cases, as follows:

(1) Tubercular labyrinthitis. A woman, aged twenty-one, after suffering from chronic suppurative otitis media for years, had radical mastoid operation. Result good; cavity dermatised and dry in seven weeks. Two years later developed phthisis. Shortly afterwards ear commenced to discharge again. In the pus were tubercle bacilli. Facial paralysis developed. The nerve could be seen when ear was mopped out. Nerve disintegrated and disappeared, due to irritation of pus and the spirit drops used. The patient was incapacitated by vertigo. The labyrinth was then extirpated; semi-circular canals, vestibule, and part of the cochlea removed. Vertigo persisted for ten days; ear healed perfectly. Patient looks well. Facial paralysis persists.

(2) Man, aged twenty-nine. No previous history of labyrinthine disease. While performing a radical operation on the mastoid, a fistulous opening was discovered in the external semi-circular canal with pus oozing from it. Canal was opened up to the ampullae and everted. Not followed by vertigo nor giddiness. Recovery uneventful.

(3) Woman, aged thirty-six. Radical operation was being done. Stapes seen in foramen ovale; it was very loose; caries round the opening. Stapes removed; inferior vestibulotomy done. Vertigo followed for two weeks. Hearing destroyed.

(4) Woman, aged forty-one. Suppurative otitis media for twelve years; facial paralysis for three weeks. Radical mastoid operation. Large sequestrum picked out of labyrinth composed of vestibule and

semi-circular canals. Recovery uneventful. Facial paralysis followed, but was nearly gone one year afterwards. *Price-Brown.*

## REVIEW.

*Diseases of the Nose, Throat and Ear, Medical and Surgical.* By WILLIAM LINCOLN BALLENGER, M.D. (471 engravings and 16 plates). London: Henry Kimpton. Glasgow: Alexander Stenhouse. 1908.

Dr. Ballenger is well known as a vigorous exponent of exceptionally original views in regard to the diseases of the nose, throat and ear. The portly volume with which he has presented us contains an elaborate account of the present state of our knowledge of these subjects, which is all the more interesting and readable because it is freely tinged with the originality which is characteristic of the author.

To the nose and accessory sinuses are devoted 285 large pages, to the pharynx and fauces 168, to the larynx 146, and to the ear 314.

The clinical anatomy and physiology of the nose and accessory sinuses naturally occupy the first place, and the author next discusses the relations of the nose, throat and ear to general medicine. Among the most valuable chapters are those dealing with such argumentative questions as the choice of operations for the correction of the obstructive lesions produced by deformities of the septum. The surgery of the tonsils is discussed without the bias in favour of the guillotine, which for various reasons is so strong on this side of the Atlantic. The subject is worthy of revision, and a judicious eclecticism is undoubtedly the proper frame of mind in which to deal with it, even if we hesitate to take quite literally the author's view that— "The technique of its removal should receive the same careful and patient attention that has been devoted to the removal of the vermiform appendix." The indications and the methods are very fully described. We should have wished for a more extensive discussion of malignant disease of the tonsil (p. 419).

The author is very radical in his treatment of purulent ethmoiditis, and describes a method for the removal of the ethmoidal cells and middle turbinal *en masse*, which he states that he has practised two hundred times without unfavourable result. Among many ingenious methods of intra-nasal operation may be noted the use of Vail's hollow-bladed saw for making a round opening in the antrum, also a magnified Ballenger swivel-knife for removing portions of turbinated bodies, and a very useful right-angled knife. In regard to the surgical correction of nasal deformities, an ingenious reverse chisel is recommended for subcutaneous use, especially in cases of "hump-nose." The author describes an operation of his own for shortening a long overhanging nose, such as we have occasionally seen to cause severe mental despondency. Paraffin injections receive favourable notice. A valuable chapter on the infective granulomata is devoted to tuberculosis, syphilis, actinomycosis, etc., as affecting the throat, nose and ear thereby; the chapters on the diseases of the separate organs are judiciously lightened.

In the paragraphs concerning the treatment of post-nasal adenoids, attention is very properly drawn to that condition which is so often overlooked, namely, a postero-superior recess in the naso-pharynx, caused by a projection of the atlas, which cannot be cleared by the ordinary curette. The author recommends in the presence of this condition a curette devised by Pyncheon, which is in reality a slight modification of Golding-

Bird's. We may mention that Quinlan's forceps, which is not referred to, is also exceedingly well adapted for meeting this peculiarity.

The vexed question of lingual varices receives consideration, and the author quotes with apparent approval the views of Lemox Browne, Lewin, Swain, Seiss and Seifert. He states that some cases are reported as occurring at the period of the menopause, and that constipation and obstructed portal circulation are ætiological factors of some importance. Though the abnormal sensations are no doubt in well-marked cases attributable to the local condition, it is in our opinion questionable whether in the less marked ones they are not more dependent on the nervous disturbances incident to the menopause, or to the constipation and obstructed portal circulation. Escot is quoted as saying that "superficial varices only make their appearance when the deep varices have acquired a certain development." Lingual varix, as such, has been made too much of, and it has also suffered unjustly owing to over-enthusiasm on the part of some of its describers. It has a place, if only a small one, in the pathogenesis of some so-called paræsthesiæ.

A singularly defective paragraph is one on page 528, purporting to give the laryngoscopic picture of malignant neoplasm of the larynx. We can only suppose that the main part of its contents has been accidentally omitted in the compilation of the book and overlooked during its revision, and that the remarks on "Semon's law" which it contains should have found their place in the section on paralysis of the recurrent laryngeal nerve (p. 494), where its omission is peculiarly inappropriate.

For direct tracheo-bronchoscopy Dr. Ballenger expresses a preference for Chevalier Jackson's tubes with internal illumination.

The section on diseases of the ear omits little that is of use and is well illustrated.

Altogether the work will be found of considerable value, and in another edition it will be all the more valuable if a little revision of the arrangement of sections is made, and if then were added to the names of the many authors quoted the references to their original works, so that the reader may consult them for purposes of elaboration as well as verification. It would be well also if the foreign names were carefully overhauled. Ruault is repeatedly misnamed Reault, and the honoured name of Professor Siebenmann appears here (p. 798) as Seibermann. Many of the defects are comparatively trivial and the general excellence is great.

### BOOKS RECEIVED.

PYE'S *Surgical Handicraft, a Manual of Surgical Manipulations, Minor Surgery, and other matters connected with the work of house surgeons and surgical dressers.* Fifth edition, revised and largely re-written by W. H. CLAYTON-GREENE. (343 illustrations and plates.) Bristol: John Wright and Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1909.

A *Handbook of the Diseases of the Nose and Throat* by EUGENE S. YONGE, M.D. Edinburgh and London: William Green and Sons. 1909.

*Lectures on Hysteria and allied Vaso-motor Conditions*, by THOMAS DIXON SAVILL, M.D. London: Henry J. Glaisner. New York: William Wood and Co. 1909.

*Practical Guide to the Diseases of the Throat, Nose, and Ear, for senior students and junior practitioners*, by WILLIAM LAMB, M.D. Second Edition. London: Baillière, Tindall and Cox. 1909.







SIR FELIX SEMON, K.C.V.O., M.D., F.R.C.P.

THE  
JOURNAL OF LARYNGOLOGY,  
RHINOLOGY, AND OTOTOLOGY.

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### BANQUET AND TESTIMONIAL TO SIR FELIX SEMON.

IN our April number we drew the attention of our readers to the steps that were being taken for offering Sir Felix Semon a testimony as to the esteem in which his work for the benefit of laryngology was held by those who were best able to judge of it. All will be pleased to learn that the activity of those who have undertaken the arrangement of the function has been rewarded with success, and in the words of the *British Medical Journal*, July 10, 1909, "The retirement of Sir Felix Semon from active practice was made the occasion of a formal farewell ceremony such as has never to our knowledge been accorded to a member of the medical profession. The movement, as was fitting, had its origin among his brother specialists, but not a few members of the general profession and a large number of persons distinguished in the social, artistic, and musical world joined in doing honour to the man who has so long been the standard-bearer of laryngology in this country."

On the occasion of the banquet, which took place at the Whitehall Rooms, Hotel Metropole, on July 2, Mr. Batlin (now President of the Royal College of Surgeons of England), in proposing the health of Sir Felix Semon, gave to those present an interesting and appreciative account of the biography of our illustrious *confrère*, which is naturally better known to our readers than to many of the distinguished company who were present on that occasion.

The Secretary, Dr. H. J. Davis, made the gratifying statement that subscriptions to the testimonial had so far amounted to up-

wards of £1200, the subscription list not yet being closed; it will thus be seen that the means are provided for carrying out the proposed intention of endowing a lectureship or scholarship in laryngology of the value of about £50 a year or £100 every two years. This form of testimonial was the one most congenial to Sir Felix, and we trust that it may be the means of encouraging some of our younger laryngologists to bring forward the results of original investigations, or to our older ones to formulate definitely from time to time the crystallised results of their experience, not so much for the honorarium attached as for the distinction of carrying out such a desirable piece of work. We understand that it is still uncertain to what body it will be entrusted, such as the University of London, the Royal Society of Medicine, or one of the Royal Colleges, either of Surgeons or Physicians. Sir Felix is an honoured Fellow of the last, and if the lectureship (should it be such) were to be delivered under the ægis of the Royal College of Physicians, we anticipate that universal satisfaction would be felt.

Among those who came from a distance to be present at the banquet we must especially mention Dr. Birkett, of Montreal, to whom was committed the agreeable task of presenting to Lady Semon a little souvenir of the occasion in the form of a diamond and pearl pendant offered by the laryngologists. Dr. Finder, Sir Felix Semon's successor in the editorship of the *Centralblatt für Laryngologie*, came in the name of the Laryngological Society of Berlin to express its sincere good wishes to its honorary member, Sir Felix Semon, and to Lady Semon.

Dr. Dundas Grant, as President of the Laryngological Section of the Royal Society of Medicine and Chairman of the Executive Committee for the arrangement of the testimonial and banquet, offered for Sir Felix Semon's acceptance on behalf of the laryngologists an album containing a large number of their photographs.

It need hardly be said that Sir Felix was in his heartiest mood, and made a speech in reply containing some interesting and amusing experiences from the earlier part of his life in London.

Among the very valuable contributions to laryngology made by Sir Felix Semon, we may note particularly the original investigations into the innervation of the larynx, carried out in co-operation with Sir Victor Horsley, the statement of the law as to the proclivity of the abductor fibres to degeneration before those for adduction, and the collective investigation as to the tendency of simple intra-laryngeal growths to become malignant, and the possible agency of intra-laryngeal manipulation in bringing this

about. Perhaps his crowning work was the practice and advocacy of early extirpation of intra-laryngeal carcinoma by means of thyrotomy, in which Mr. Butlin's guidance in the earlier stages of the work was of so much value to him.

Sir Felix Semon has always been an able controversialist, and in some instances his powers of dialectic and his possession of "the courage of his opinions" have naturally excited some antagonism on the part of those with whom he was in controversy, especially in relation to some of the more sensational aspects of progressive rhinology, but in the out-standing works to which we have referred above he has undoubtedly carried conviction captive. These works will be an enduring memorial, and we scarcely see any possibility of their material modification in spite of whatever novelties the advance of human knowledge and research may bring forth.

Our contemporary, the international *Centralblatt für Laryngologie*, was founded by Sir Felix Semon and edited by him for nearly five and twenty years, and it is with the heartiest goodwill that we wish his successor, Dr. Finder, as great and even greater success in his editorship of the *Centralblatt* than has been obtained by his illustrious predecessor.

One of the most interesting mementoes of the banquet is the striking picture of Sir Felix drawn for the *menu* by his friend Sir Hubert von Herkomer, and we have to tender to Sir Hubert our best thanks for permission to reproduce it in this number of the *JOURN. OF LARYNGOL., RHINOL., AND OTOL.* Sir Hubert has made a very generous offer to paint a three-quarter size portrait of any sitter for the fee of £600, the whole of which sum he is prepared to give to the testimonial to Sir Felix. It is to be hoped that this opportunity of increasing the endowment of the lectureship may not be lost, and that someone interested in Sir Felix's work and in the progress of laryngology, as well as desirous of having a portrait by such a distinguished artist, will be found.

In the meantime we can only offer our hearty congratulations to Sir Felix on being able to retire from the storm and stress of professional work while still able to enjoy the various aspects of life—science, travel, art, sport, etc.—for which his many-sided nature is so well adapted.

### THE NEW PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS.

THE name of Henry Trentham Butlin is so familiar to laryngologists in connection with the work that he has done in regard to the pathology and the surgery of the larynx, that they will feel an especial pride in his election to the presidential chair by the Council of the Royal College of Surgeons. Mr. Butlin has received numerous academical honours, which he has honestly earned by devoted and laborious work in the interests of such institutions as the British Medical Association and the University of London. For many years he had the charge of the Throat Department at St. Bartholomew's Hospital, and numbers of his pupils can still bear witness as to the energy and enthusiasm which he displayed in the instruction he afforded them. To him more than to anyone else is due the evolution and perfection of the operation of thyrotomy, especially in connection with early intra-laryngeal epithelioma, the valuable effects of which have been well exemplified in the results obtained by him and by Sir Felix Semon. Among Mr. Butlin's earlier works was one on carcinoma and sarcoma of the larynx, which was a sequel to his Jacksonian prize essay on carcinoma and sarcoma in general. He was one of the earliest presidents of the Laryngological Society of London, and he has been from time to time an active participator in its clinical discussions. The members of the Society were always impressed by the well-weighed utterances of his own views and by the dignified and courteous consideration which he was ever ready to give to the views expressed by even the least experienced speakers. Those who know him best will realise best how well he is calculated to exercise a healthy influence in the presidential chair to which, we hear without surprise, his election was unanimous.

### A MEMORIAL TABLET ON THE BIRTH-PLACE OF THE LATE SIR MORELL MACKENZIE.

Any tribute to the memory of this illustrious pioneer in laryngology will be a source of gratification to laryngologists all over the world. On Monday, July 19, a tablet was placed on the house in Leytonstone where Sir Morell Mackenzie was born. The movement was initiated by the Leyton Urban Ratepayers' Association, and the unveiling of the tablet was performed, with appropriate remarks, by Mr. Morgan, formerly Member of Parliament for the Romford

Division, a well-known native of Essex, and a companion in childhood of the members of the Mackenzie family. The specialty and the medical profession in general were represented by the President of the Section of Laryngology of the Royal Society of Medicine (Dr. Dundas Grant), Dr. Jobson Horne, Dr. Morton Mackenzie, and Dr. Panting. These gentlemen referred to the striking qualities of the man who was the subject of the memorial, not merely in his technical, but in his social relations. Dr. Morton Mackenzie expressed the gratification of the family at this tribute to the memory of his uncle.

It is regrettable that so little prominence was given in the medical press to this interesting ceremonial, as we are sure that very many of the admirers of this remarkable man would have wished to be present. We venture to express a hope that opportunities will be afforded them of showing their feelings in such a manner as to perpetuate his memory in a still more prominent way, though his numerous classical contributions towards the evolution of laryngology in this country will always remain as a monument among those who can appreciate the difficulties attending pioneer work.

### CONGENITAL SYPHILITIC DISEASE OF THE EAR.

*Being Part II of the Report for the year 1908 from the Ear and Throat Department of the Royal Infirmary, Edinburgh, under the charge of Dr. A. Logan Turner.*

BY J. S. FRASER, M.B., Ch.B., F.R.C.S.E.

Assistant Surgeon.

SINCE Hutchinson (1), in 1861, called attention to the symptoms of congenital syphilis, numerous observers have investigated the condition of congenital specific deafness, which, along with the peg-shaped notched incisor teeth and the interstifial keratitis, makes up the triad of symptoms characteristic of this disease. Hermet and Baratoux found deafness present in one third of all cases of inherited syphilis, while Hutchinson and Jackson give 10 per cent. as the proportion of cases so affected, but Bezold (2) considers these numbers much too high. This observer found that 13 out of 233 cases of acquired deaf-mutism (5.6 per cent.) were due to congenital syphilis, and places this disease next to cerebro-spinal meningitis and middle-ear suppuration as a cause of acquired deaf-

mutism. As the result of recent observations Mayer (3) suggests that meningitic changes, which he has found to be frequently present in congenital syphilitic infants, may account for many cases of what has up to now been regarded as congenital deaf-mutism.

*Histological Pathology.*—Accurate observations on this point are still wanting. Nager (4) is of opinion that the condition is one of primary otitis interna or labyrinthitis in which the vestibular and cochlear apparatus are both affected. Baratoux (5) thinks that the condition is due to disease of the blood-vessels and that hæmorrhage occurs into the labyrinth, destroying Corti's organ. Walker Downie (6) has examined microscopically the only case of congenital specific deafness in which the condition of the labyrinth has been reported on; he found the middle ear normal except for bony fixation of the stapes; the vestibule and semi-circular canals were filled with new-formed bone and the cochlea was narrowed by thickening of the modiolus and lamina spiralis; the internal auditory meatus was markedly narrowed. Recently Mayer has examined microscopically the inner ears of eleven cases of congenital syphilis occurring in infants; in nine of the eleven cases purulent otitis media was present, but this condition is found in 90 per cent. of infants at autopsy; in only one case was the tympanic membrane perforated, and in no case was there any bone disease or inflammatory invasion of the labyrinth from the middle ear. On the other hand, he comes to the following conclusions: (1) Inflammatory processes occur in the meninges of children affected by congenital syphilis. (2) Specific interstitial inflammation of the acoustic nerve accompanies this meningitis. (3) The inflammatory process thus spreads to the inner ear, most frequently giving rise to irritation, but sometimes to inflammatory exudation. Meyer thinks that these changes are the same as those which give rise to late specific deafness, and that the conditions observed by Walker Downie are only the later stages of this process. It may be remarked that the condition found by Walker Downie—evidently that present in a labyrinthitis which has been recovered from—can be made to fit in with almost any view of the pathology of congenital syphilitic disease of the inner ear, *e.g.* primary labyrinthitis, infection by way of the internal auditory meatus, or disease of the blood-vessels leading to hæmorrhage. The following facts, elicited during the present investigation, bear to some extent upon the pathology of the disease; in three cases (Nos. 9, 15 and 29) giddiness preceded the deafness by a month



or more, while in another case (33) giddiness first occurred four years after the onset of deafness; these statements seem to be in favour of labyrinthitis or hæmorrhage. On the other hand, in one case (No. 31) facial paralysis of the peripheral type occurred suddenly fourteen months after the onset of deafness; this observation tends rather to support the view that localised meningitis is the causative condition. A diffuse gummatous infiltration of the inner ear might involve also the internal auditory meatus and so give rise to facial paralysis.

*Present Investigation.*—The cases reported on in this paper number thirty-three and were observed during a period of twenty-eight months. As the number of ear cases presenting themselves during this period numbered about 2520, the cases of congenital syphilitic deafness amounted to 1·3 per cent. of the total. The majority of the cases were examined on two or more occasions, and whenever possible information was obtained from the parents or friends in order to corroborate the patient's statements; to anyone who knows the conditions present in these cases it is needless to explain the great difficulty attending an accurate investigation of congenital syphilitic deafness from the clinical point of view.

*Age.*—Bezold states that the deafness occurs between the seventh and eighth or between the eleventh and twelfth years. In the present series the incidence was as follows: 0–5th year, 1 case; 6th–10th year, 8 cases; 11th–15th year, 8 cases; 16th–20th year, 6 cases; 21st–25th year, 4 cases; 26th–30th year, 3 cases; 31st–35th year, 2 cases; age of occurrence of deafness not ascertained, 1 case; total 33. Bezold has observed a case in a woman at the age of forty-nine.

*Sex.*—It is generally stated that the female sex is more often affected than the male; thus Wanner's series of twenty-one cases includes fifteen females. In the present series the preponderance of the female sex is not so striking: of the thirty-three cases, nineteen were females and fourteen males.

*Position of Patient in the Family.*—This was ascertained in twenty-six cases, and in fourteen it was found that the patient was the *eldest* or an *only* child; in two other instances there had been a *long* interval, with several miscarriages and stillbirths between the birth of the patient and that of the next eldest child. Only two of the thirty-three cases were from the same family, but three other patients stated that brothers or sisters suffered from eye trouble or deafness.

*Mode of Onset.*—Bezold states that the deafness is almost

always bilateral, sudden, and severe, and that giddiness and tinnitus may be present at the start; the tinnitus may continue. Wanner (7) also states that deafness occurs suddenly within a week or a month, but that tinnitus and giddiness are seldom noted at the commencement. The mode of onset was ascertained in twenty-two of the present series; in eight it was said to be sudden (one to three weeks), whereas in fourteen cases it was stated to be gradual. In ten cases there was a history of tinnitus, but many patients stated that they could not remember accurately the details of an illness that occurred so long ago. Nine patients said that they had suffered from giddiness when the deafness commenced, and two of these stated that the *giddiness had preceded the deafness* by a month or more: five patients said that giddiness was not present when deafness began.

*Condition of the Teeth and Eyes.*—Hutchinson teeth are said to be present in 50 per cent. of cases of congenital specific deafness (Bezold), and, according to the same author, eye disease occurs three or four years before the onset of deafness. Interstitial keratitis was present in all but one of the present series of cases: the ophthalmoscopic appearance was noted in fifteen cases, and chondritis was found in six cases; optic atrophy in one case.

The present opportunity is taken of thanking Dr. George Mackay, Dr. W. G. Sym, Dr. J. V. Paterson, and Dr. A. H. Sinclair for their kindness in making the ophthalmoscopic examinations, and also for sending several of the patients for examination. In six cases the eye trouble and deafness were stated to be practically simultaneous; in ten cases the interval was only one or two years, while in one case the deafness occurred twenty-three years after the eye disease. Two patients stated that the onset of deafness had been coincident with an improvement in the eyesight; on the other hand, Wanner states that the eye trouble often relapses when the deafness occurs. In three cases the condition of the eyes was such as to render lip reading impossible.

The condition of the teeth was noted in twenty-six of the thirty-three cases; in ten of these typical peg-shaped notched incisors were present; in six the teeth were slightly peg-shaped but not notched; in ten cases, Hutchinson teeth were not present or the incisor teeth were absent or decayed.

*Condition of Patient at Time of Examination.*—Nineteen patients complained of tinnitus at the time of examination, while five stated that they had no noises in the ears (in nine cases this point was not inquired into). Twelve patients suffered from occasional

giddiness (three had fallen from this cause), while five stated that this symptom was absent (no data in twelve cases). With regard to the amount of deafness present, it must be noted that ten patients were able to hear a raised voice in one or other ear, while six of these stated that they could hear the watch in contact with the anricle! In only one case was the watch heard by both ears. In fourteen cases the watch was not heard at all, while in regard to twelve cases there are no data. Schwabach's test was found to be lengthened in only four cases, but even this statement must be accepted with considerable doubt, though every effort was made to get the patients to distinguish between the feeling of vibration and the sound of the fork. It may be mentioned here that in two of these four cases the vestibular apparatus was irritable to almost the normal degree; in one case this function was not tested, and in only one of the four cases with lengthened Schwabach was the vestibular apparatus non-functionating. Bárány (8) has on the other hand observed a case of isolated specific disease of the left vestibular apparatus; there was spontaneous nystagmus to right, and loss of irritability of left vestibular apparatus; whisper, however, was heard by the left ear at 6 mètres. Schwabach's test showed shortening or absence of bone-conduction in nineteen cases, while in ten cases there are no data. Weber's test in almost all cases lateralised to the better ear.

*Otoscopic Appearances.*—Politzer (9), Bezold, and Wanner agree that the tympanic membranes seldom present a normal appearance. The condition found is usually that present in Eustachian obstruction, and unless a careful functional examination be made a mistake may easily occur in diagnosis. Wanner states that inflation is the best means of diagnosis, for in pure cases of Eustachian obstruction we obtain in this way an improvement in the hearing distance, or even a return to normal, whereas in the congenital specific case there is little or no effect. In four of the thirty-three cases reported on there was a history of former suppurative otitis media, but in only two cases was this condition present at the time of examination; only four patients had normal tympanic membranes on both sides, while two others had one normal and one in-drawn membrane. Twenty-five patients showed signs of tubo-tympanic catarrh on one or both sides (opaque, lustreless, in-drawn membranes with or without congestion).

*Tuning-fork Tests.*—According to Wanner the result of tuning-fork testing in these cases is that obtained in disease of the inner ear, *i. e.* normal or narrowed lower tone limit, marked shortening

or loss of tone-conduction, great defect in upper tone-limit. Bezold states that the two ends of the scale become shortened until only an island remains, and finally even this may disappear; at any stage the process may come to a standstill. Twenty-two of the cases were examined, and the lower-pitched tuning-forks ( $C_{16}$ ,  $C_{32}$ , and  $C_{64}$ ) were only heard by three patients; the medium pitched forks ( $C_{128}$ ,  $C_{256}$ , and  $C_{512}$ ) were heard by thirteen of the twenty-two—in four instances by both ears;  $C_{1024}$  and  $C_{2048}$  were also heard by thirteen patients. For details in regard to the Galton whistle the reader is referred to the individual case records, but the number of instances in which the whistle was heard up to almost the upper tone-limit was a remarkably large one.

*Vestibular Irritability.*—In the investigation of the vestibular apparatus the rotation and caloric tests were employed; in some cases both methods were used. The galvanic reaction was not investigated, because Wagener (10) and others have shown that by this means the nucleus of the vestibular nerve is tested and not the end-apparatus. All cases were tested for spontaneous nystagmus before rotation or syringing. The rotation test was carried out at the rate of ten revolutions in twenty seconds, and the duration of the nystagmus was measured by an assistant. In the caloric test cold water was employed as a rule. Out of the twenty-five cases examined in this way spontaneous nystagmus was probably present in nine, though doubtful in two. The reaction of the vestibular apparatus was absent in fourteen cases, slight in seven cases, and fairly marked or normal in four cases. On the whole the condition of the cochlear and vestibular apparatus was found to correspond; in those instances where the voice was heard vestibular reaction was present, and in those cases where the patient was totally deaf the vestibular reaction was absent. It was also possible to confirm the observation that nystagmus after rotation to the right proceeds mainly from the left labyrinth and *vice-versá*.

Pike (11) has previously reported on the examination of the vestibular apparatus in seven cases of congenital syphilis; in all there was diminution or absence of vestibular irritability.

*Facies of Patient: Condition of Nose and Pharynx.*—Of the fifteen cases in which a note about the facies of the patient was made, eight were regarded as typical of congenital syphilis apart from the question of corneal opacity, *e.g.* shape of the forehead, sunken nasal bridge, scars about the angle of the mouth, etc. The nasal septum was perforated in three cases; in six cases the odour of the patient's breath was typical of ozaena, but in only three of

these were the characteristic atrophy of the inferior turbinals and crust formation observed; the other three cases had a distinctly ozaenic odour without atrophy, or, indeed, marked abnormality of the nasal mucosa. It is well known that in anemic patients the inferior turbinals may be shrunken and apparently atrophied without ozaenic odour of the breath; this fact, in combination with the observation just recorded, viz. that ozaenic odour may exist without atrophy, support that view of the aetiology of ozæna, which affirms that the characteristic odour is due to secondary putrefactive changes in the inspissated nasal secretion, and is not an essential element in the disease. In five cases adhesions were noticed between the septum and inferior turbinals, while two patients showed syphilitic cicatrices in the pharynx and one the result of laryngeal syphilis (loss of part of epiglottis).

Of the twenty-one cases above sixteen years of age fifteen were able to follow some occupation, while five others (women) were married, so that only one patient was dependent on relatives.

*Treatment.*—All authorities agree that treatment should be commenced as early as possible, *i.e.* that the patient should be placed on potassium iodide without a moment's delay, and that mercurial treatment (preferably in the form of innjection) should be commenced. Politzer recommends pilocarpine injections—a line of treatment in which Gorham Bacon (12) and Gradenigo agree. Bezold notes that in half of his cases of congenital specific deafness mercurial innjection had been carried out previously during the treatment of the interstitial keratitis, and had of course failed to prevent the occurrence of the aural complication. Unfortunately patients do not come at once to special hospitals (the earliest case in the present series was seen three months after the occurrence of deafness), so that it is not possible to say what might be the result of immediate treatment on the lines above laid down. One case developed sudden deafness while a course of anti-syphilitic treatment was being carried out in an eye hospital; four fairly early cases were observed after a course of anti-syphilitic treatment had been carried out for several months. In none of these was any improvement noted, and two of the patients had become worse in spite of treatment. It must be acknowledged, therefore, that the prognosis in cases of long standing is practically hopeless, and that in early cases the patient's chance (if it be a chance) of retaining a useful degree of hearing depends on the general practitioner making a correct diagnosis and commencing treatment at once.

CASE 1.—M. B.—, aged thirteen, female, has been partially blind for four years, two years ago she lost her hearing suddenly. Mother has six children of whom patient is the second: no miscarriage. *Examination*: Tympanic membrane almost normal, right slightly retracted. Tuning-fork tests probably not reliable. Teeth not typical. Dr. Mackay reports that patient is suffering from congenital specific kerato-iritis. Patient did not return for functional examination of cochlear and vestibular divisions of the auditory nerve.

CASE 2.—J. B.—, aged twenty-two, male, youngest of a family of ten; others dead. Patient suffered from eye trouble and deafness at the age of eight years. Deafness came on within a day or two; no history of otorrhea; loud voice not heard close to ears; complains of noises in ears like "glass-breaking." Suffers from giddiness, but has never fallen. *Examination*: Hutchinson teeth not present. Tympanic membranes thickened and retracted. Tuning-fork and watch tests not reliable. Spontaneous oscillating nystagmus present, but not increased on looking to right or left. Doubtful if any reaction to syringing with warm water on either side. Marked ozena odour noticed. Perforation of nasal septum. Potassium iodide internally along with mercurial inunction resulted in no improvement of ear condition.

CASE 3.—J. C.—, aged nineteen, labourer, suffered from eye disease at age of twelve, and from deafness at the age of seventeen years; this deafness came on slowly and increased up to the present time. He complains of noises in his head like "machinery," and of frequent attacks of giddiness. The tympanic membranes are retracted and slightly congested. The patient can hear a loud voice close to the left ear, but cannot hear at all with the right ear. Watch not heard by air- or bone-conduction. Schwabach shortened; tuning-forks not heard by right ear and hardly at all by left ( $C_{32}$  not heard,  $C_{256}$ —8 seconds,  $C_{512}$ —35 seconds). No spontaneous nystagmus; on turning ten times to right and stopping suddenly nystagmus to left for five seconds only. Rotation counter-clockwise gives negative or doubtful reaction. Caloric nystagmus negative both ears. Dr. Sinclair reports corneal opacities and adhesions of iris in both eyes. Teeth too decayed to note the presence of Hutchinson type. An ozena-like odour is present in the patient's breath, but there is no atrophy or crust formation in the nose. Pharyngitis sicca is present. The patient's speech is peculiar.

CASE 4.—M. D.—, aged seven, female, suffered from keratitis at the age of five and a half, and from sudden deafness one year later. Patient is the fifth child of the family; J. D.— (Case 20) is the eldest; the second and third died at the age of one month, and the fourth child has begun to complain of sore eyes; of the four children younger than patient three are alive and so far healthy. Patient suffered from tinnitus when the deafness commenced, but is now free. No history of giddiness when deafness commenced, but child is giddy now if she turns quickly. Tuning-fork tests not reliable. Moderate spontaneous nystagmus on looking to right and left, but no reaction to turning test or to syringing with cold water. Tympanic membranes in-drawn and congested. Dr. Sym reports interstitial keratitis. Corneal opacity so marked that patient will not be able to learn lip-reading; this is unfortunate as patient is rapidly losing her speech.

CASE 5.—D. M.—, aged twenty-two, male, suffered from eye disease at age of thirteen years and became deaf five years later; deafness took four months to develop. No history of giddiness at this time, but the patient states that he is now "shaky in the dark," and complains of singing noises in the ears. The tympanic membranes show loss of gloss, redness, and retraction. The patient is unable to hear a loud voice by either ear, and cannot hear a watch or tuning-fork by air- or bone-conduction. There is no spontaneous nystagmus and no reaction

to rotation or caloric tests. Dr. Sinclair reports interstitial keratitis and choroiditis. The patient's sight is too bad for lip-reading and he can only read large print with his eyes close to the paper. The teeth are typical, and the patient's speech is very peculiar and difficult to understand.

CASE 6.—P. McI. —, aged twenty-three, male, became deaf two years ago in right ear; left ear only deaf for last three months; says that deafness is worse in the mornings and gets better about midday; no pain or discharge. Giddiness for last three months when deafness is worst. *Examination*: Membranes opaque, but otherwise normal; marked corneal opacities. Hutchinson teeth present. Facies typical of congenital syphilis. Schwabach shortened; Weber to left (better ear); slight spontaneous nystagmus to left. Patient did not return for functional examination of vestibular apparatus.

CASE 7.—A. McK. —, aged sixteen, female, is stated to have suffered from eye disease and deafness at the age of three years. Patient is the eldest of a family of seven, the other children being healthy. Mother had two miscarriages before birth of patient. Deafness is stated to have come on suddenly after measles, and both tympanic membranes are retracted and show cicatrices. The patient is unable to hear the voice and cannot hear the watch by bone- or air-conduction. The tuning-fork tests were gone over several times, with the following result: Schwabach lengthened? Weber not lateralised; Rinne negative both ears. By air-conduction tuning-forks not heard by left ear below  $C_{512}$ ; right ear does not hear  $C_{32}$  and  $C_{64}$ , but hears the others, though for a much shortened period. Galton whistle heard only up to 8000 D.V.S. The patient does not complain of giddiness, and there is no spontaneous nystagmus and no reaction to caloric tests. Dr. Sym reports interstitial keratitis and disseminated choroiditis. Teeth of Hutchinson type. Nose and pharynx normal. Patient is a good lip-reader and is in domestic service; speech is distinct.

CASE 8.—F. W. —, aged twenty-two, female, rubber worker, became deaf in one night at the age of eleven; no history of giddiness obtained at that time, but patient now complains of noises, like steam in her ears, and of occasional attacks of giddiness. She cannot hear at all with the right ear and hardly at all with the left, and she is unable to hear the watch by air- or bone-conduction. On the vertex  $C_{256}$  is not heard. By air-conduction none of the forks are heard on the right side, and on the left only  $C_{1024}$  and  $C_{2048}$ ; the latter appears to be painful to the patient. The Galton whistle is heard by the patient up to 20,000 D.V.S. On testing for spontaneous nystagmus the eyes follow the finger with a quivering movement, but there is no typical vestibular nystagmus. There is no reaction to rotation or caloric tests. Dr. Sym reports interstitial keratitis, disseminated choroiditis, and optic atrophy. The patient is able to lip-read. The teeth are typical of congenital syphilis. There is a marked ozena odour, and green crusts are present in the nose.

CASE 9.—W. A. —, aged fifteen, male, had eye trouble at the age of thirteen years, and became deaf within one week at the age of fifteen. There is a history of giddiness for one month *before* the deafness began. "Buzzing" noises in the ear came on with the deafness and have continued. The tympanic membranes are normal. The patient cannot hear at all with the right ear and can only hear a loud voice close to the left ear; watch heard in contact with left auricle only. Schwabach slightly shortened, Weber to left (better ear); Rinne negative left ear.  $C_{32}$  is not heard by either ear. The only tuning-forks heard by the right ear are the two highest, but all the forks from  $C_{64}$  upwards are heard by the left ear, though there is considerable shortening in the middle of the series. Galton whistle heard to 13,000 D.V.S. No giddiness or spontaneous nystagmus present.

After rotation to the right there was nystagmus to the left for four seconds, whereas rotation to the left produces nystagmus to the right for only two seconds. Caloric test negative right ear, but slightly positive left ear. Dr. Sym reports interstitial keratitis; Hutchinson teeth present; nose and pharynx normal.

CASE 10.—K. A.—, aged twenty-one, female, suffered from disease of the eyes at the age of five and from deafness at seven years; the deafness is said to have come on gradually. No history of giddiness or noises in the ear. Tympanic membranes retracted and opaque. The patient is completely deaf in the left ear but can hear the *ordinary* voice at one foot by the right ear. Watch heard by right ear in contact with mastoid and auricle, but not by left ear. Schwabach test slightly shortened; Weber to right (better ear); tuning-forks not heard at all by left ear;  $C_{32}$  not heard by right ear; the other forks are heard, the shortening being greatest in the middle of the scale. Galton whistle heard by right ear up to *normal upper limit*. Slight spontaneous nystagmus is present on looking to right and to left. The caloric reaction of the right vestibular apparatus is apparently normal, but there is no reaction on the left side. Corneæ opaque; Hutchinson teeth present; nose and pharynx normal. The hearing distance of the right ear improves on inflation. Patient's speech is somewhat peculiar. Lip-reading not necessary. It is stated that the patient's eyesight improved somewhat when the deafness commenced.

CASE 11.—M. B.—, aged twenty, female, servant, had trouble with eyes at the age of fourteen, and two years later became deaf quite suddenly in the right ear; left ear only became deaf one month ago; deafness occurred in one night. Patient is an only child. She complains of tinnitus, and states that she was very giddy when deafness first came on. *Examination*: Membranes show loss of gloss and opacity. Corneæ not quite transparent; Weber to left; Schwabach shortened.  $C_{32}$  and  $C_{64}$  not heard; other forks heard slightly by left ear, but not at all by right; Galton whistle only heard up to 16,000; watch not heard by air or bone. Patient can hear raised voice by left ear at one inch. No spontaneous nystagmus; vestibular apparatus on both sides reacted to syringing with warm water (118° F.); rotation reaction not tested. Dr. Sym reports a small nebula in the right cornea, and disseminated choroiditis in both fundi.

CASE 12.—M. D.—, aged twenty-six, female, married, did not suffer from eye trouble till the age of twenty-two, and only became deaf at the age of twenty-four. Deafness came on in three weeks, and was accompanied by hissing noises in the ear. The patient still suffers from tinnitus and giddiness, and states that she tends to fall backwards. Patient is the eldest of a family, the other members of which are as yet healthy. The tympanic membranes show atrophic spots and chalk patches. The left ear is quite deaf, and a raised voice is only heard at six inches by the right ear. The watch is not heard by air- or bone-conduction. Tuning-fork not heard on vertex;  $C_2$  not heard by either ear, but the other tuning-forks are heard by the right ear, though for greatly shortened periods. Galton heard only up to 6500 D.V. by right ear. Caloric reaction absent on both sides. Marked interstitial keratitis present, but teeth too decayed to observe the type. Nose and pharynx normal.

CASE 13. Mrs. F.—, twenty-nine, became deaf two years ago, but has been worse during the last month or two. Patient suffers from marked interstitial keratitis, and has had iridectomy performed on both eyes. Both membranes are opaque and lustreless; tuning-forks not heard by bone. Bridge of nose depressed, and septum shows large perforation; fauces and pharynx show cicatrised contraction. Epiglottis has been partially destroyed. Patient can hear a shout with difficulty; she did not return for examination of the vestibular apparatus.



CASE 14.—J. G——, aged twelve, female, had eye disease at age of nine, and two years later became suddenly deaf within fourteen days. No history of giddiness was obtained; tympanic membranes are normal; raised voice not heard by either ear; watch and tuning-forks not heard by air- or bone-conduction. No giddiness or noises in the ears at present. Spontaneous nystagmus present, but no reaction to rotation or caloric tests. The cornea show interstitial keratitis, which is so severe as to prevent reading. Speech is peculiar. She can lip-read, but cannot talk on her fingers. Teeth of typical Hutchinson type; nose normal. It is stated that the eye condition improved somewhat when the deafness began.

CASE 15.—J. H——, aged nineteen, male, glassworker, had eye disease in infancy and became deaf at the age of twelve years. The attack of deafness was preceded by giddiness and was slow in developing, being accompanied by buzzing noises in the ears. Patient has no brothers or sisters alive; three children born before him, but the first two were still-born and the third only lived two hours; two children born after patient only lived for four months. The tympanic membranes show opacity and retraction. The left ear is quite deaf, and the right only hears the raised voice at three inches; watch heard on contact with the right ear but not with the left. Schwabach shortened; Weber to right; tuning-forks and Galton whistle not heard by the left ear; C<sub>32</sub> not heard by right ear, but the other forks are heard, though for shortened periods; Galton (right ear) up to 12,000 D.V.S. Patient still complains of giddiness, but there is no spontaneous nystagmus; vestibular excitability absent. Dr. Sym reports that the eye changes are those of congenital specific disease. Teeth are not of the Hutchinson type. Nasal cavities narrow, but otherwise normal.

CASE 16.—J. R——, aged fifteen, male, first had eye trouble at age of ten years; he is now quite blind; deafness came on about the same time. Patient staggers as he walks. On examination, Hutchinson teeth are marked; cornea quite opaque. Left membrana tympani perforated; meatus contains fetid discharge; tuning-forks not heard by bone or air. Patient did not return for examination of vestibular reaction.

CASE 17.—N. P——, aged twenty-five, female, carpet washer, had eye trouble at the age of sixteen and became gradually deaf at the age of twenty. Patient is the eldest of the family alive, but mother had a stillborn child before the birth of patient. Patient complains of noises in the ear and giddiness. There is no history of middle-ear trouble, but the tympanic membranes show cicatrices and chalk patches. Right ear quite deaf, but raised voice heard close to left ear; watch not heard by air or bone. Schwabach shortened, Weber to left (better ear); tuning-forks not heard by right ear, and only C<sub>1024</sub> and C<sub>2048</sub> by left; Galton whistle to 20,000 D.V.S. by left ear. No spontaneous nystagmus and no reaction to rotation or caloric tests. Dr. Sym reports slight corneal opacities and choroiditis. Teeth decayed; nose and pharynx normal.

CASE 18.—G. R——, aged fourteen, male, suffered from eye trouble at age of thirteen, and from deafness at age of fourteen; the latter trouble came on gradually (four months). There is a history of marked giddiness and noises in the ear when the deafness began, but these symptoms are now absent. Both tympanic membranes are pink, lustreless, and in-drawn; both ears are totally deaf, the watch, voice and tuning-forks not being heard. The patient suffers from marked spontaneous horizontal and rotatory nystagmus, best marked on looking to the right. Rotation and caloric tests do not influence the nystagmus as far as can be ascertained. The teeth are not of the Hutchinson type, and the nose is normal. Patient's condition is a very pitiful one, as he is totally deaf, and so blind that he cannot understand the deaf-and-dumb alphabet unless he feels the fingers of the person talking to

him. One brother, aged eleven, is beginning to suffer from eye trouble, but as yet is not deaf. Patient is the eldest in the family.

CASE 19.—I. R.—, aged twenty-eight, female, factory girl, was first troubled with her eyes at the age of nine years, and again at twelve, but did not become deaf till the age of nineteen—the left ear being affected shortly before the right one. Deafness occurred suddenly and was accompanied by marked tinnitus and giddiness; she still suffers from both these symptoms. Tympanic membranes opaque and in-drawn. Loud voice not heard by either ear; watch and tuning-forks not heard by air- or bone-conduction. No spontaneous nystagmus, and no reaction (nystagmus) to rotation tests, but patient complains of giddiness after turning. Corneae show marked opacities. Voice is high pitched and peculiar. She cannot read print on account of her eyesight, but can lip-read. Incisor teeth notched.

CASE 20.—J. D.—, aged thirteen, male, suffered from eye trouble at the age of six years and from deafness one year later; deafness took six months to develop. There is a history of tinnitus at that time, but not of giddiness. The right tympanic membrane shows atrophic patches, while the left is in-drawn and injected. Right ear quite deaf; left ear can hear loud voice. Patient states that he can hear watch in contact with left auricle! Schwabach shortened; Weber to left.  $C_{32}$ ,  $C_{64}$ , and  $C_{128}$  not heard by either ear;  $C_{256}$  heard by left, not by right; other forks heard by both ears, but better by left than by right. Slight spontaneous nystagmus on looking to right and left—most marked to right; no reaction to rotation or caloric tests. Marked corneal opacity, and typical Hutchinson teeth. Nose shows ozæna, and sense of smell is lost.

CASE 21.—J. T.—, aged thirty-five, female, has been deaf since childhood. Corneal opacities present, especially in left eye. Tympanic membranes opaque. Patient is markedly deaf, but appears to hear the tuning-fork ( $C_{256}$ ) by bone-conduction. Adhesion between left inferior turbinal and septum; pharynx normal. Vestibular apparatus not examined.

CASE 22.—E. G.—, aged nine, female, suffered from eye trouble at age of seven years, and from deafness one year later; deafness came on gradually. No history obtained of noises in the ears or giddiness at onset of deafness or at present; no history of miscarriage or stillbirth obtained from mother. Patient is eldest child, and has one sister aged eight (healthy). *Examination*: Typical Hutchinson teeth. Tympanic membranes in-drawn and congested. Tuning-fork tests not reliable. No spontaneous nystagmus, and no reaction to turning test. Child reported after interval of nine months—five of which were spent in anti-syphilitic treatment. No improvement in condition—in fact, mother states that child is now completely deaf, whereas she was able to hear a loud voice at time of first visit.

CASE 23.—B. M.—, aged thirty-three, male, has been deaf for three years in right ear; left ear has only troubled him lately. Both membranes show retraction, but while the right one is pale the left is congested. Watch not heard on forehead or mastoids, but heard on contact with each ear. Schwabach shortened.  $C_{32}$  not heard. Patient can hear the ordinary voice at eighteen inches by left ear. Vestibular apparatus not examined.

CASE 24.—A. C.—, aged twenty-seven, female, laundress, suffered from eye trouble and deafness at the age of eight years. Both eyes have been operated on. Patient is the eighth child of a family of nine. The first five children are alive and healthy; the sixth child is in an asylum; the seventh child is healthy, and the ninth child is healthy, but is said to have a "very big head." Right membrana tympani perforated; granulations protruding through Shrapnell's membrane.

Left membrana tympani indrawn. Patient could hear a little in the left ear up to five days ago, but at that time she became quite deaf. She cannot hear tuning-forks or watch by air- or bone-conduction; complains of noises in the ear. No spontaneous nystagmus, and no reaction to rotation tests. Patient cannot read or write; she can, however, lip-read. She will not use the deaf-and-dumb alphabet. Nose shows perforation of nasal septum and adhesion of inferior turbinates to septum; there is a slight ozæmic odour. Teeth decayed. Patient put on iodide and mercurial inunctions. She reported six weeks later, but there was no improvement.

CASE 25.—F. B.—, aged twenty-eight, female, suffered from eye trouble at the age of ten years, but did not become deaf till she was twenty-seven, after the birth of her third child. She suffered from giddiness and tinnitus when the deafness commenced, but the giddiness has now passed off, though the noises remain, especially in the left ear. The patient is the eldest of the family, but her mother had one miscarriage before the patient was born. Patient states that her deafness came on slowly, and as yet it is not severe. On examination the tympanic membranes show loss of polish and redness along the handle of the malleus on each side. Schwabach shortened; Weber to left; Rinne positive both ears.  $C_{32}$  not heard by either ear;  $C_{64}$  and  $C_{128}$  heard by both ears;  $C_{2048}$  shortened 10 seconds by both ears; watch not heard by air- or bone-conduction, but the highest tones of Galton whistle are appreciated. No spontaneous nystagmus on looking to right or left. Rotation tests give negative results, though patient says she feels giddy. Caloric test not applied. There is a distinct ozæmic odour in the patient's breath, though on examination there is no atrophy of the turbinates and no crust formation. The corneæ are slightly opaque. Incisor teeth not present.

CASE 26.—G. G.—, aged ten, male, has suffered from eye trouble since birth. History of otorrhœa four years ago, but no discharge now. Deafness came on gradually one year ago, and was accompanied by giddiness but not by vomiting. Patient has buzzing noises in the left ear. He is the fourth child in the family, the three older children being healthy. *Examination:* Hutchinson teeth. Left membrana tympani small perforation; right membrana tympani shows large retracted scar. Watch not heard on mastoids, but heard in contact with right auricle. Schwabach lengthened; Rinne negative both ears; Weber lateralised to right.  $C_{32}$  not heard,  $C_{64}$  heard by right ear only,  $C_{128}$  heard by both ears; other forks heard by air-conduction; high notes Galton well heard. No spontaneous nystagmus. Caloric tests not possible on account of struggles of child; rotation tests show nystagmus of only 5 seconds' duration after ten rotations to left; after rotation to right, nystagmus present but much reduced.

CASE 27.—A. C.—, aged twenty-five, labourer, has had disease of eyes since age of eight years, and deafness for only three months. Patient has no brothers or sisters. The deafness came on suddenly and was accompanied by giddiness. *Examination:* Typical Hutchinson teeth, prominent forehead, tympanic membranes in-drawn and opaque; watch not heard by bone- or air-conduction;  $C_{256}$  not heard by bone or air; patient can hear loud voice close to left ear. No spontaneous nystagmus: after rotating ten times to right and stopping suddenly, nystagmus to left for twelve seconds; rotation to left only produced nystagmus to right for five seconds. Slight deviation of septum is the only nasal abnormality.

CASE 28.—K. McC.—, aged nineteen, female, laundress, suffered from eye trouble at age of ten, and five years later, while under treatment for this affection of the eyes, she became deaf. She suffers from giddiness and noises in the head. Patient is the eldest of the family alive, four other children being dead: the two others living are healthy. *Examination:* Corneæ opaque; Hutchinson teeth well marked; tympanic membranes opaque and retracted. Watch not heard by air or bone; Schwabach shortened. Lower tuning-forks heard, higher ones not heard;

Galton whistle not heard. Vestibular apparatus not examined. Slight nasal catarrh present.

CASE 29.—M. H.—, aged twenty-four, male, type-setter, has had trouble with eyes since she was "young," but has been deaf for only three years (twenty-one); deafness came on slowly, and patient states that she suffered from "dizzy turns" before the deafness began; she now complains of buzzing noises in the ears like "machinery." Patient is the eldest of a family of nine girls; the others are healthy, and there is no history of miscarriage or stillbirth before patient was born. Patient does not suffer now from giddiness. *Examination*: Speech is rapid thick, and peculiar; the teeth are not typical. Both tympanic membranes markedly in-drawn, opaque and congested. Watch not heard; Schwabach shortened; both bone- and air-conduction greatly shortened for C<sub>256</sub>. No spontaneous nystagmus, and no reaction to rotation tests. Nose only shows septal deviation.

CASE 30.—J. T.—, aged thirty-six, male, basket-maker, first had eye trouble at the age of seven or eight years, and became deaf eighteen months later. For many years he has been unsteady in his gait, but does not remember about any attacks of giddiness at the onset of deafness. Patient is quite blind now and cannot lip-read. The left ear is totally deaf, but he can hear a raised voice by the right ear. He suffers much from noises in his head, which keep him awake at night. Patient is the eldest of the family. *Examination*: The speech is remarkably good. Upper incisors absent; lower ones not typical. The tympanic membranes are practically normal. Watch not heard by bone or air, and bone-conduction for tuning-forks much shortened. Tuning-forks up to and including C<sub>256</sub> not heard; others heard by right ear but not by left. Galton whistle heard up to 20,000 D.V.S. by right ear. No spontaneous nystagmus and no reaction to rotation tests.

CASE 31.—J. H.—, aged ten, female, had interstitial keratitis nine months ago and became deaf two months ago. Patient's mother gives a history of two miscarriages previous to birth of patient; and elder sister, aged twenty-two, is healthy. Tympanic membranes in-drawn and opaque. Patient put on mercurial inunction. At next visit, one year later, facial paralysis (of peripheral type) was found to be present on the right side; it had existed for only five days. Mercurial treatment was carried out for some months after first visit and hearing is said to have improved slightly, but during the three weeks before patient's present visit the hearing power has rapidly deteriorated. Teeth not typical; soft palate moves normally. Tympanic membranes pinkish and show loss of gloss; no mastoid tenderness. C<sub>32</sub>, C<sub>64</sub>, C<sub>128</sub>, C<sub>256</sub> not heard by either ear; C<sub>312</sub> heard by both ears; C<sub>1024</sub> not heard by either ear. Galton's whistle not heard above 15,000 D.V.S. Bone-conduction shortened on both mastoids. No spontaneous nystagmus; after ten rotations to the right nystagmus to the left lasts for only three seconds; no reaction after turning to left. Slight caloric nystagmus to right on syringing left ear with cold water (five syringe-fuls); no caloric reaction obtained from right ear. Two months later the facial paralysis was still present.

CASE 32.—R. S.—, aged eight, male, had eye trouble at age of sixteen months; cornea are said to have become clearer of late. Mother has always thought that the child was a little deaf, but during the last fortnight this has become more noticeable. Patient complained of noises in his ears two days ago. No giddiness. Mother has noticed the eyeballs moving backward and forward for about three years. Patient is the elder of two children; no history of miscarriage obtained from mother. *Examination*: Adenoid facies; notched incisor teeth (not peg-shaped, however). Tuning-fork tests not reliable. Tympanic membranes pink and in-drawn. Marked spontaneous nystagmus to left on looking to left, and to right on looking to right. Vestibular apparatus not tested. Purulent rhinitis present along with adenoid post-nasal growths.

CASE 33.—J. R —, aged thirty-eight, female, has suffered from eye trouble since age of ten years, and became deaf at age of thirty-three; deafness came on gradually, and was not accompanied by giddiness till one year ago. Patient has fallen on two occasions during the last year owing to attacks of giddiness. She complains of noises in the ears like the "sound of a telephone." Patient is the eldest of the family, her younger brothers and sisters being so far quite healthy. She is married and has three healthy children, but her eldest child died of "brain trouble" at the age of fourteen months. Patient cannot see to read print, but she lip-reads. As yet she is not completely deaf. *Examination*: Typical Hutchinson teeth; left tympanic membrane normal; right membrane shows slight injection along malleus and some opacity. Watch not heard by air or bone; C<sub>32</sub> and C<sub>64</sub> not heard; C<sub>128</sub> and C<sub>256</sub> heard slightly by left, but not by right. C<sub>512</sub> shortened 60° by left ear, C<sub>1024</sub> shortened 25°, and C<sub>2048</sub> shortened 20°; none of the forks heard by right ear except C<sub>2048</sub> (this probably heard by left ear though held to right meatus). Galton whistle only heard up to 15,000 D.V.S., not at all above this. Slight horizontal and rotatory nystagmus on looking to left (patient volunteers the statement that her eye "twitters"); no nystagmus on looking to right. After rotation to right (ten times in twenty seconds) there is increase in nystagmus to left for about ten seconds; after rotation to left nystagmus occurs to right for seven seconds. Nose and pharynx normal.

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## REVIEW.

*Golden Rules of Dental Surgery.* By CHARLES W. GLASSINGTON, M.R.C.S., L.D.S.E.D. "Golden Rules" Series, No. XIII. (Third edition.) Bristol: John Wright & Son. London: Simpkin, Marshall, Hamilton, Kent.

Under this title the author has compiled a number of crisp and instructive paragraphs containing many technical and a fair number of ethical counsels. These are probably of considerable value to the aspiring odontologist, but there are among them some which the medical practitioner, including the laryngologist, will find well worthy of his study. The remarks on local and general anesthetics (chiefly nitrous oxide) are extremely good, as being meant for the guidance of the non-medical dentist; the precautions necessary are laid down with unusual clearness and emphasis. Three pages are devoted to hints for medical practitioners, and very properly include reference to the necessity for oral cleanliness during long or severe illnesses, and instructions for effecting it. The ethical cautions are full of shrewd suggestions.

## THE EMPLOYMENT OF HOT AIR IN OTOTOLOGY.<sup>1</sup>

BY DR. COME FERRAN,

Clinical Assistant in Otology and Laryngology in the Faculty of Lyons;  
Physician to the Hôpital St. François.

(Translated by MACLEOD YEARSLEY, F.R.C.S.,  
Senior Surgeon to the Royal Ear Hospital.)

IN bringing forward in this modest paper the results which have been obtained by the employment of hot air in the treatment of affections of the middle ear, used systematically for two years and a half, I do not pretend to offer any new facts; my researches and results only confirm those demonstrated before us by different authors, and especially the remarkable work of Lermoyez and Mahu.

The improvement which has been effected in a very great number of cases has been so encouraging that it has seemed worth while to make them known, for they will help, possibly, to generalise a method of treatment which has only the difficulties of installation and apparatus against it.

These difficulties I have gradually greatly simplified; the small apparatus shown, and which has been used for over two years, consists of a simple Politzer bag prolonged by an aluminium neck containing an electrical resistance. By making a current pass through this little ten candle-power lamp, easily obtained commercially, a heat is obtained in about four or five minutes which reaches 70° or 80° C., a heat which can be made more intense if no current of air is allowed to pass, and which can be very quickly gauged on the back of the hand with a little practice.

This apparatus is on quite a different principle to that of Lermoyez and Mahu, or to that of Beaujois; it is not heavy or cumbersome, and permits catheterisation to be performed after a little time as easily as with an ordinary Politzer bag. It requires no special technique or instrumentation and allows of the use of Itard's gum elastic sound, which withstands as great a heat.

The first idea of this apparatus came from America. The merit belongs to Elmslie, Solis, Oaks, and especially to Beck, whose work upon the subject I have, unfortunately, been unable to obtain; Bernoud and Garel have for several years praised an apparatus based upon the same principle.

The apparatus shown has the merit of being easily managed

<sup>1</sup>From the *Bulletins et Mémoires de la Société Française d'Oto-Rhino-Laryngologie*, tome xxiv, 11<sup>e</sup> partie, 1908.

and sufficiently light not to make catheterisation painful to the patient. It is only necessary that the electric current provided shall be of a voltage sufficient to light a ten candle-power lamp.

I have worked, as a rule, by sittings of short duration repeated twice a week, and on each occasion by a series of short inflations of about six to ten seconds. In certain cases daily sittings have given good results in patients who appeared little improved by less frequent treatment.

These inflations of hot air have been employed in a great number of patients without the least difficulty, and the results offered are based on 217 observations.

It must, in the first place, be clearly announced that a certain number of cases have been little influenced by this treatment: these are instances of pure oto-sclerosis, unhappily so numerous, and upon which, up to now, nothing seems to act.

As with the authors who have preceded me, in these patients I have only had but little encouraging results, and where there has been any improvement it has been in those patients with concomitant naso-pharyngeal lesions and tubal catarrh.

The aërothermic treatment appears to do good to the part that is due, in the troubles of which the patients complain, to the sclerosing otitis properly so-called and to super-added inflammations.

At first the patients, in the first two or three sittings, experience a real improvement, the ears are more permeable, the tinnitus lessened. Audition seems clearer; but if it is an instance of true oto-sclerosis and advanced ankylosis of the stapes, these results are not accentuated in the later sittings and hearing is not improved.

Beside these cases of incurable deafness, there are plenty of others in which the middle-ear lesions are complicated by former attacks of tubal catarrh, and in which the ankylosis is not as yet too advanced. In these cases of chronic otitis media with more or less old tubal stenosis, treatment by hot air has given results which I was unable to obtain before.

1) M. G. B.—, retired captain. Arthritic constitution. Deafness lasting four years, gradual onset; tinnitus especially on the right side.

Chronic median otitis, thickening of the membranes, light reflex diffused. Hearing, Weber negative. Bone-conduction normal. Watch: R. 5 cm., L. 11 cm.; ordinary catheterisation after eight sittings; tube moderately permeable, and bougies passed, R. 35, L. 54. Tinnitus much less. This patient came to see me eight months later. His ears had gone back to 10 cm. Hot-air inflations used; after ten sittings, twice a week, I obtained R. 71, L. 96; hearing to ordinary

speech quite normal, and low voice perceived. This patient was seen again last year, and six months after his treatment the results were R. 63, L. 80.

(2) Mme. M——. Deafness three years, following pregnancies. The patient has had various crises of rheumatic attacks, and suffers every winter from very bad colds. She has tinnitus and deafness, especially right. On otoscopic examination membranes thickened, especially on the right, on which side is a calcareous plaque; light reflex diffuse on both sides.

Functional examination to watch: R. + 8, after five sittings 26—hot air, 41, 74, 81, 90, 99; L. + 20, ordinary catheterisation, 38—hot air, 52, 85, 95, 90, 102.

At the end of the treatment the tinnitus had disappeared, and the patient said she heard as formerly.

(3) M. M——, chemist. Arthritic constitution; has had rheumatic attacks several times. Deafness about five years; treated by ordinary catheterisations, which preserved some hearing to the patient. Having heard the hot air spoken of, he came to me very sceptical on the subject of possible improvement to his hearing, but hoping to find relief from his tinnitus. Old chronic rhinitis, frequent colds.

On otoscopic examination both membranes thickened, posterior fold very marked on the R., where the membrane is very indrawn. Catheterisations with hot air employed twice a week, and the watch examination gave: R., 4, 14, 23, 26, 35, 39, 49, 58; L., 7½, 17, 21, 27, 32, 42, 48, 58. The tinnitus was very sensibly diminished, and the patient heard much better.

These examples could be multiplied, but such a course would be superfluous, and anyone could very easily obtain similar results. Improvement is most rapid, probably according to the more or less advanced state of the ankylosis, for it does not appear that in these cases one has only to deal with tubal catarrh. The results appear much more slow than when it is simply a matter of tubal catarrh or catarrhal otitis with or without exudation; under the action of hot air the improvement is very rapidly obtained.

I have nearly always noticed in those patients, after a more or less pronounced inflammatory attack of the upper air-passages following an attack of influenza, or simply an acute cold, leaving ear trouble, sensations of obstruction, deafness, and more or less intense tinnitus, a very rapid disappearance of these conditions by ordinary catheterisation. When fluid exudations are present, after the evacuation of the serous fluid, inflations of hot air seem to prevent its return.

(4) M. V——, insurance inspector. Very arthritic constitution, with old chronic rhinitis and congestive attacks; suffered with right ear following a cold. Whilst travelling he consulted a specialist, who diagnosed an acute median otitis and punctured twice. The fluid reappeared, and when he returned I found a marked bubbling on catheterisation, after a fresh paracentesis and the evacuation of a fairly large amount of fluid. As the patient was in pain I could not catheterise him afresh. He returned two days later; the fluid had re-formed. Fresh paracentesis and fairly prolonged hot-air inflation. The treatment sensibly improved the patient, and two days later the fluid appeared in very small amount. I no longer



punctured, but catheterised with hot air, and, in several sittings, obtained the progressive disappearance of the exudation and the return of hearing.

The efficacy of the aërothermic treatment is very remarkable in cases of deafness which are complicated with tubal stenosis, and which one sees in patients with enlarged turbinals, nasal polypi, and especially with adenoids.

When one has remedied the cause of the inflammatory attacks and removed the tumour, the action of hot air is much more rapid than that of ordinary catheterisation, and I have thus obtained a return to normal hearing in subjects whom ordinary inflations have only improved to a very moderate amount.

These are common cases, and I could, were it not superfluous, multiply examples. In acute median otitis with perforation the aërothermic treatment gives good results in certain cases, probably by reducing congestion of the tubal orifice and by lessening the tubal catarrh. It should be practised very gently so as to avoid blowing pus into the antrum by the aditus, which I have never seen. In certain forms of chronic middle-ear suppuration it appears that hot air, probably by an analogous mechanism, gives good results in old suppurations. I have tried it in despair on several occasions in patients who, with dry tympanic cavities, had attacks of suppuration I could not succeed in getting rid of, and have obtained very rapid cures, probably by improving the tubal condition rather than by the direct action of the hot air on the tympanum.

In cases of acute or chronic median otitis I have tried insufflations of hot air blown directly into the tympanum *via* the external auditory meatus, through the perforation on to the mucons membrane, and this treatment has given improvement neither more distinct nor more rapid than other methods, and has not appeared to me to be as efficacious as the treatment by the tubal route.

It seems that the action of hot air, putting aside a mechanical effect, acts entirely by modifying the condition of the mucons membrane of the tube and that of the nasopharynx surrounding its pharyngeal orifice. When one examines rhinoscopically before and after inflations of hot air one sees a contraction of the mucosa, of the turbinals, and of the Eustachian cushion somewhat analogous to that which is seen after painting with cocaine or adrenalin. The fact is not constant, but I have seen it frequently. It explains the improvement obtained by catheterisation with hot air.

I have tried the use of balsamic essences, which have been so long praised by Dr. Bernoud: Essence of pinewood, balsam of Peru, terebine, tincture of benzoin, essence of vervain, which I

have used in turn. They have not appeared to have any action superior to that of ordinary hot air.

The use of hot air in otology is a method of treatment only contra-indicated in cases where labyrinthitis is suspected. In practice, beyond this rare condition, it is always harmless if one does not go beyond moderate heat. It is an easy method to practise and requires no added treatment to augment its efficacy.

It has in many cases surprised me by the power of its action, and it is this which has impelled me to publish my results, not to re-discover an already old method, but merely to re-confirm what greater authorities have insisted upon before me. My little apparatus will, perhaps, have the merit of making its employment easier, and will aid in making general a treatment which merits a place in the daily practice of the otologist.

## THE FUNCTIONAL EXAMINATION OF THE LABYRINTH.

By Drs. E. J. MOURE AND PIERRE CAUZARD.

(Abstract translation by Dr. DAX McKENZIE.)

(In the exhaustive *résumé* of diagnostic methods presented by the authors of this paper much is necessarily included that is already current knowledge among specialists. The following abstract, however, includes only those facts and opinions which have been discovered and put forward by the more recent workers in our field of medicine.)

### ANATOMY AND PHYSIOLOGY.

Running over the bulbar, cerebellar, and cerebral connections of the auditory and vestibular nerve-trunks, the authors note that among the gray nuclei on the nerve-fibres which diverge from the vestibular nerve there are several reflex centres, and among them are included the corpora quadrigemina, the anterior pair of which reflect, it is said, visual, and the posterior, auditory stimuli. But the qualification is made that this theory of the function of the corpora quadrigemina is far from being admitted by most neurologists.

The most important connections of the vestibular nerve are

<sup>1</sup> The *rapport* or introduction to a discussion on this subject at the Congress of the French Society of Laryngology, Otology, etc., Paris, May, 1909.

effected through Deiter's nucleus in the medulla, from which nerve-fibres pass (1) to the nucleus of the sixth cranial nerve of the same side, (2) to the posterior longitudinal bundle of the same side; and (3) to this bundle and to the third cranial nerve of the opposite side.

#### THEORIES OF AUDITION.

*The Conducting Apparatus.*—Bezold's view, that the hearing of a fork of 32 V.D. is a sign of the mobility of the stapes, has recently received support from Schaeffer and Sessions as a result of a series of tests upon seventeen patients in whom the radical mastoid operation had been carried out in both ears. These observers conclude that when the tympanic apparatus is destroyed the auditory range is but slightly modified, while the delicacy of hearing is more or less seriously impaired.

Moore and Canzard, discussing the same question, express the opinion that the effect of middle-ear disease on the hearing power depends upon the form of the lesion; when, for example, there is fibrous ankylosis between the individuals of the ossicular chain, or when ossifying processes seal up the oval window, then an actual obstruction is presented to the transmission of sound-waves; and on the other hand, when the membrane, malleus, and incus are wanting, the defect is merely one of accommodation and no more.

#### NOISE-DEAFNESS (OCCUPATION DEAFNESS).

(Wittmack's experiments dealing with the effect of noise upon guinea-pigs have not only thrown light on the pathology of noise-deafness, but have also supplied some experimental evidence in favour of Helmholtz's classical theory of audition, consequently we describe them here at some length.)

Several series of experiments were carried out. First of all the aerial conduction of continuous noise was tested, and in this case the internal ears of the animals killed after 5, 10, 15, 20, 40 and 60 days' exposure showed no lesion of any sort or description. Secondly, the continuous noise was conducted both by bone and by the air. In this group well-marked degeneration of the neurons of the cochlear ganglion, with beginning destruction of the organ of Corti, were produced, while the vestibular nerve and its apparatus were unaffected. In a third series aerial and bony conduction were utilised alternately, and here also distinct signs of

degeneration of the cochlear-nerve and the organ of Corti were discovered. In a fourth series the loud noises were of short duration: in one group the noise was frequently repeated, and similar changes to those just mentioned were induced in the internal ear; in another group the animals were submitted to the effect of a very loud noise on one single occasion, and then killed after varying intervals of waiting. In this last group slight alterations were noticeable in the nerve-cells, nerve-fibres, and sensory cells.

The remarkable discovery was made that in all the animals exposed to the same sound the cochlea was damaged at the same spot, namely at the passage of the lowest into the second turn of the spiral.

The experiments proved that in the production of noise-deafness bone-conduction plays a preponderant rôle.

More recently Siebenmann and Yoshii have repeated these experiments, without, however, being able to assign the same importance to bone-conduction. In other respects, however, their observations confirm those of Wittmack. With Ut<sup>5</sup> (C<sup>3</sup> = 1024 V.D.) the upper portion of the basilar turn was the part most seriously damaged, while with the lower note, H<sup>2</sup> (between 217.5 and 256 V.D.), the lesion was found half a turn higher in the cochlea; so that Siebenmann concludes that "a pure tone attacks one point of the cochlea only, and the lower the sound the nearer to the apex is this point."<sup>1</sup>

#### ACOUMETRY.

The usual hearing-tests are discussed and the authors express their adherence to orthodox views.

Attention is drawn to auditory scotomata, or lacunæ in the gamut of hearing, which may be due either to a limited defect in the cochlea or to a cortical lesion (A. Marie).

#### THE VESTIBULAR TESTS.

Von Stein's static tests are detailed as follows:

- (1) Patient stands with feet together and eyes open.
- (2) With feet together and eyes closed.
- (3) On one foot with eyes open or closed.
- (4) On tip-toe: (a) on both feet; (b) on one foot; (c) with eyes open; (d) with eyes closed.

In labyrinth lesions the patient sways and may fall when he

<sup>1</sup> See JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxiii, 1908, p. 433, and *Verhandl. der Deut. Otol. Gesell.*, 1908, p. 114.

tries to stand on one foot, even with the eyes open. In recent severe cases he is unable to stand at all.

#### GONIOMETER TESTS.

Von Stein's goniometer consists of an inclined plane, the angle of which can be increased or decreased at will. The extreme inclination in which a normal person can maintain his balance is from  $35^{\circ}$  to  $40^{\circ}$ , with the feet placed toes pointing upward or across the plank, and from  $26^{\circ}$  to  $30^{\circ}$  with the toes pointing downward. Goniometry by itself is very little practised, but it is sometimes of service when taken along with the other tests. "Dynamic orientation," in which the patient is made to walk and jump with open and closed eyes, requires no further description.

In unilateral labyrinthitis the patient in walking deviates towards the affected side, especially when the external semi-circular canal is affected. In the case of the other canals the direction and character of the gait are singularly varied, and are of value in determining the canal affected (see Bárány's remarks on this point).

In recent cases the static and dynamic troubles are so plain that these tests are unnecessary; in old cases, on the other hand, they will give no information whatever; but in cases in which the initial upset has passed off they will be found to be of great value.

#### NYSTAGMUS.

*Spontaneous nystagmus* is, of course, not absolutely diagnostic of a labyrinth lesion, for it also appears when an occipital convolution is suffering from pressure, in extra-dural abscess, and in abscess or other disease of the cerebellum [and in meningitis.—D. M.]. It may also be seen in simple otitis media, with or without exudation. Its disappearance means either that the exciting lesion has got well or that the labyrinth has been destroyed.

This type of spontaneous nystagmus guides us to the canal affected only in one single instance, namely, in that of horizontal nystagmus, for in the rotatory types the nystagmus may be made up of irritating stimuli from several canals together. If, however, the nystagmus alters from the horizontal to rotatory variety in the course of the illness, it is permissible to argue that the irritation in the labyrinth has spread from the horizontal to its neighbour—the superior vertical canal.

Spontaneous nystagmus persisting after destruction of the end-organs of both sides arises either from irritation of the extremity or trunk of the vestibular nerve, or from a central lesion, such as cerebellar abscess. In such cases the tests will not modify the nystagmus (Gradenigo).

The spontaneous nystagmus of infective labyrinthitis passes through three stages: (1) A short and transitory stage of irritation with nystagmus to the *affected* side; (2) the stage of destruction with nystagmus to the *sound* side; (3) the stage of disappearance of spontaneous nystagmus.

While spontaneous nystagmus is present there is almost always disturbance of equilibration, often combined with great muscular weakness, especially in recent unilateral affections, but also, at times, in acute bilateral vestibular destruction. The great difference between the nystagmus of labyrinth disease and that of cerebellar lesions is, that in the former the nystagmus is directed to the sound side and it tends to disappear, whereas in the latter the nystagmus is generally directed to the affected side and it tends to get worse.

Among the remote disabilities consequent upon destruction of the labyrinth the authors mention the interesting observations made by James that it is almost absolutely impossible for deaf-mutes to swim.

Thomas has confirmed this observation by experiments on dogs. If the vestibular nerve is cut the animals cannot keep themselves afloat and will drown if not rescued, although when they are deprived of the cerebellum, the vestibular apparatus being perfect, they can support themselves in water perfectly well and are even able to swim. [The observation that deaf-mutes cannot swim seems to require modification.—D. M.<sup>1</sup>]

#### INDUCED NYSTAGMUS.

Cauzard has tried the effect of cocaineising the outer wall of the labyrinth, without, however, producing any result.

The details of the tests described are based upon Bárány's work.

Discussing the theory of induced nystagmus the authors share with many other observers a difficulty in accepting the purely physical explanations which have been put forward. Moure is inclined to ascribe the nystagmus effected by thermal changes

<sup>1</sup> This question will receive consideration in our next issue.

in the meatus to vaso-constriction and dilatation of the blood-vessels of the labyrinth reflexly excited from the meatus. In applying the caloric tests cold is preferred to heat, because with the latter the nystagmus is not set up unless the temperature of the water is higher than  $40^{\circ}\text{C}$ ., and the meatus and membrane do not bear well a temperature of  $45^{\circ}\text{C}$ . or more.

An exaggeration of the induced nystagmus has been found in cases of cerebellar abscess, probably as a result of an irritable condition of Deiter's nucleus (Hautant, Moure).

The following scheme, in which the results of the nystagmus tests are taken in conjunction with the other symptoms and signs, shows according to Bárány how a correct diagnosis may be made between cerebellar abscess and tumour of the cerebellum and auditory nerve.

If there is otorrhoea, apyrexia, absolute deafness, and negative caloric response in the affected ear, together with well-marked spontaneous nystagmus to the affected side, we may be sure of the presence of cerebellar abscess.

If there is complete deafness with a normal membrane, negative caloric reaction, and spontaneous nystagmus to the affected side, we ought to suspect a tumour affecting the acusticus, even before the patient presents facial paralysis, trigeminal paralysis, or optic neuritis.

At the same time the authors point out that the absence of the vestibular reflex of itself is not sufficient evidence that the lesion affects the acusticus, since the same result may be induced by a lesion in the course of the vestibular nerve or at the level of Deiter's nucleus. Further, care must be taken to make sure that the absence of the vestibular reactions is persistent before we finally conclude that the system is disorganised.

#### VARIETIES OF NORMAL REACTIONS.

Infants are difficult to test and rotation is the only method feasible at the earliest ages, the patient being seated in a nurse's lap. In children before they begin to walk the nystagmus is prolonged (forty-five to sixty seconds) as compared with adults, but the period gradually lessens with increasing years, and in the aged (fifty to seventy years) the nystagmus is feeble and of short duration. [Bárány could find no difference in this respect between the ages of six and forty-nine years.]

The authors confirm Bárány's rule with regard to the nystagmus

after rotation when one labyrinth is out of action. The rule is--the after-nystagmus to the sound side is more marked than to the affected side.

Moure and Canzard attach no importance to pressure-nystagmus, for it may be absent in cases of fistula, and, on the other hand, it may be obtained in cases in which no labyrinth disease at all exists.

The vestibular tests may prove of great value in forensic medicine. If, for example, unilateral deafness is complained of after an accident, the total absence of vestibular reaction in that ear will confirm the patient's statement. And Canzard recently diagnosed destruction of the vestibular apparatus in a case of head-injury, where epistaxis, conjunctival ecchymosis, vertigo and deafness were present without any hæmorrhage from the ear.

The important and as yet unsettled question of when to operate on the labyrinth is raised by a perusal of the following case :

Hantant has recently reported to the Parisian Society of Otology an interesting case in which, although vertigo was present, he was able to diagnose simple functional abolition of the vestibular sense. The radical mastoid was performed, and cholesteatomatous disease and osteitis over the horizontal portion of the facial canal were found. Fifteen days later pressure upon this diseased area induced nystagmus, and the caloric and rotation reactions gradually returned. Hantant therefore concluded that the vestibular end-organs were recovering and abstained from operation on the labyrinth. This case has led the authors to conclude that the abolition of reflex nystagmus and the presence of spontaneous nystagmus do not necessarily betoken purulent labyrinthitis, and they do not agree with Halphen and Lemaître when the latter say that in serous labyrinthitis the reflex nystagmus is conserved.

Alexander, who has also devoted considerable attention to this important point, has come to the following conclusions :

(1) In purulent labyrinthitis there is definite (and irremediable) abolition of all function.

(2) In serous labyrinthitis the auditory and vestibular functions return to the normal after cure of the active disease.

(3) In trivial labyrinthitis occurring in the course of chronic suppuration of the middle ear the vestibular excitability is never impaired, and the typical spontaneous nystagmus to the sound side is never seen.

After detailing a number of interesting cases and summarising the methods they have so fully described, the authors make a brief



allusion to Ménière's syndrome, and conclude with the following remark, which is well worthy of literal translation :

"From this study the very important fact is brought to light that it is often possible to decide whether vertigo is due to a disease of the ear or whether it is necessary to seek elsewhere for an explanation of a symptom so deceptive and often so difficult to interpret from the standpoint of general medicine."

## SOCIETIES' PROCEEDINGS.

### PROCEEDINGS OF THE PARISIAN SOCIETY OF LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

March 10, 1909.

M. MAHIC, *President, in the Chair.*

#### CONTRIBUTION TO SEPTICEMIA OF OTITIC ORIGIN.

By M. LUC.

This communication depends on two cases. The first concerns a boy, aged eleven, in whom septicæmic phenomena appeared on the tenth day of a suppurative middle-ear otitis of obscure origin, in the form of fever with marked oscillations. As there was mastoid tenderness on pressure Luc performed antrotomy, but no pus was discovered. The fever persisting, he resected in two interventions the whole of the mastoid, then opened the lateral sinus and bulb of the jugular, but only found the vessel normal. Dr. Netter, called in consultation, administered an intra-venous injection of collargol. The fever not only persisted, but the clinical tableau of septicæmia gave place to that of meningitis, and a lumbar puncture established without doubt the presence of meningeal infection. Collargol was then injected daily, alternately into a vein and the subarachnoid space, but the infection continued to increase, and at the expiration of a few days the child died, after having exhibited cardiac pulsations more and more irregular and feeble, and finally coldness of the surface. Examination of the blood and cerebro-spinal fluid revealed the presence of streptococci and staphylococci.

The second patient, a man, aged thirty-six, was in the

seventh week of an influenzal otitis. He had experienced neither fever nor mastoid tenderness, when suddenly septicæmia manifested itself in the form of shivers, followed by fever. In spite of the absence of mastoid tenderness M. Luc had already suspected for some time past involvement of the antrum in the suppuration, on account of the profuse character and persistence of the latter. The very next day following the manifestation of septicæmia the mastoid was therefore opened and was found filled with pus. The width of the aditus permitted free discharge. The dura mater of the middle fossa and lateral sinus was exposed but found healthy. This intervention did not check the trouble, which ended in death in three days, in spite of two intra-venous injections of collargol.

With the exception of Kernig's sign, which was well marked, there had been no symptoms of meningitis. All the symptoms were limited to fever and rapid action of the heart and pulse (embryonic type). The patient lost consciousness some hours before death, which was preceded by progressive cooling of the extremities. Luc deducts the practical inference from these facts that when an acute suppuration of the middle ear persists beyond four weeks without tendency to abate, one ought to suggest antrotomy to the patient, pointing out the dangers to which he subjects himself, and leaving the responsibility to him.

M. CASTEX said that Luc's two patients recalled exactly two of his, in whom he also had to deplore a fatal result, the same clinical aspect, and the hesitations in regard to lateral complications. He therefore endorsed his conclusions in favour of immediate intervention, and would formulate his method of procedure for the opening of the tympanum and antrum as follows: When in doubt, operate.

M. LERMOYEZ said that the term "septicæmia" had an extremely vague significance, which was liable to give rise to some misunderstanding. In very acute otitis attended with fever, it meant that there was an absorption of toxin and septicæmia in a variable degree, a fever with marked pyrexial oscillations simulating those of surgical pyæmia. But it would be an error to presume that marked otitic septicæmia was always indicative of thrombo-phlebitis, either total or partial. This septicæmia might arise whenever there was a retention of very virulent germs in the various situations of the middle ear. He had seen it disappear several times after a simple paracentesis, and had seen it cease after trephining the mastoid. He had also seen it end after evacuation of an extra-dural abscess without involvement of the sinus. It

was therefore important even in the presence of the most characteristic septicæmia to proceed from the simple to the complex, and to open in sequence the tympanum, mastoid, and the skull, before coming to the incision of the lateral sinus, which latter was always an intervention depending on circumstances. It would be interesting if one could draw up different schemes according to the seat of origin of otitic septicæmic cases. The symptom which seemed the most important to consider was the pronounced rigor. He had scarcely ever seen it fail to be present in the case of sinusal thrombo-phlebitis. On the contrary, in non-sinusal otitic septicæmia, even when the chart showed tremendous oscillations, he had never personally observed it. He had only seen in such a condition repeated but slight shiverings. As regards the time for trephining the mastoid, he agreed with Körner and Luc, admitting that all purulent discharge from the middle ear, which persisted longer than a month without diminishing, demanded a mastoid operation, even in the absence of every other symptom. He had, moreover, shown in former statistics that when cases of acute otitis are properly treated by dry and absorbent dressings, they usually evolve according to two types; one short, lasting from ten to fifteen days, the other long with an average duration of four weeks. And from these statistics it might be concluded that an acute discharge from the middle ear, which after appropriate treatment lasted more than a month, was certainly kept up by mastoid osteitis, and that it was necessary to trephine with the double object of preserving the hearing and life of the patient.

M. LOMBARD had observed two interesting cases of auricular septicæmia, the first in a girl, aged fifteen, attacked with right otitis media. Paracentesis had been performed twice by a colleague, the first time at the onset of the otitis, the second, owing to the fear of retention, when the temperature was very high. He saw the patient after this second paracentesis. She had had some rigors the day before and presented a temperature of 40° C. in the evening and 37° C. in the morning. There was scarcely any discharge from the ear. He performed a classical antrotomy and nothing was found either in the antrum or cells. The temperature curve was not altered after the trephining. He did not open the sinus and performed no operation on the vein. M. Netter, who saw the patient at the time, decided to apply the collargol treatment. Administration of the medicament by the alimentary canal and frictions did not yield any appreciable result. An intra-venous injection was practised before undertaking an operation on the sinus,

which seemed likely to become necessary. After the well-known reaction the fever fell definitely and the patient recovered without recourse to a second operation. The second case was that of a child, aged twelve, who during convalescence from influenza developed a left otitis media. This was ushered in by intense pain and a rise of temperature to  $40^{\circ}\text{C}$ . The pain ceased during the night. The days following, in spite of complete rest, the temperature oscillated between  $40^{\circ}\text{C}$ . and  $46^{\circ}\text{C}$ . in the evening and  $37^{\circ}\text{C}$ . and  $36.8^{\circ}\text{C}$ . in the morning. He was called on the fourth day, when the posterior quadrant of the membrane was bulging and red, and the anterior quadrant intact. Neither œdema nor pain on exploring the mastoid process. He performed a free paracentesis, and in unison with the colleague who attended the patient the treatment by intramuscular injections of electrargol was carried out. Forty-eight hours after the paracentesis and twenty-four after the first injection the temperature became normal. In both cases the general condition was extremely bad and caused the greatest anxiety. These clinical types rendered it evident that there was no room for doubt concerning that group of pyæmic phenomena described long ago by Körner. To explain them one had called in question phlebitis of the intra-osseous venules. Was this really necessary? He believed that we had to do simply with a particular form of otitis—septicæmic otitis, one of the varieties of otitis infection. There were some cases of septicæmic otitis with very slight local reaction, at least at the onset, as there were some with a markedly inflammatory local reaction, such as phlegmonous otitis and hæmorrhagic otitis. It would be convenient therefore to distinguish some as septicæmic otitis, and others as otitic pyæmia, in which the infection of the blood was secondary to that of the peri-petrous venous system. As regards the indication for the mastoid operation in otitis which suppurated longer than four weeks, he was of M. Luc's opinion that it was necessary to protect the patient from an eventual complication by opening the mastoid process. Certainly there were some cases of otitis which recovered after four, six and eight weeks. But the opening of the mastoid properly carried out was not a serious operation; it was better to err by being too prudent and to operate too soon than too late after the appearance of a complication.

M. Luc's experience did not coincide with that of Lermoyez as to the prognostic value of the presence or absence of marked rigors during pyæmic or septicæmic phenomena of otitic origin. In fact he had observed this symptom, very pronounced, in two cases of

pyæmia without thrombo-sinusitis, which had been published in his volume of lectures (pp. 412 and 414). Both patients referred to recovered without having undergone any operation on the mastoid or lateral sinus, and they were not submitted either to the collargol or electrargol treatment, for the good reason that these medicaments were not then known. If the medication in question had been applied to them no doubt it would have been credited with the recovery. In short, the clinical differentiation between the benign and malignant forms of septicæmic and pyæmic phenomena of otitic origin represented what was at the present time still one of the most embarrassing problems with which we could be confronted.

PECULIAR DEFECTS OF PRONUNCIATION IN A CHILD, THE SUBJECT OF  
ADENOIDS, CURED BY OPERATION.

BY M. VIOLET.

The case was that of a child, aged four years and two months, with incomplete development. This child only commenced to talk at two and a half years of age. At three years one could not make anything out of his conversation. He mispronounced a number of words: he said *paiss, quiss, fiss, famiss* for *paille, quille, jille, famille*; *Gnissot* for *Gnillot* (his name); *solese, semess, abessile, amesset* for *soleil, sommeil, abbaye, tramway*; *pule, mule, fule lulu*, for *ponle, moule, foule loulou*; *pour* for *bon*, *monte* for *monde*, *mia* for *moi*, etc. An examination of the ears revealed the drumheads retracted, without light-reflex. The hearing was diminished on both sides, but more so on the left. Post-rhinal examination gave evidence of a large mass of adenoids (4 gm.). Eight days after the operation the membranes resumed their normal position; light reflex present. Fifty days subsequent to the intervention the child pronounced the words enumerated above correctly. The author was of the opinion that the pharyngeal obstruction explained the classical nasal phonation, and the child in question said *demean* for *demain*, *punn* for *pain*, *pon* for *bon*, etc.—that is, speaking through the nose. But, on the contrary, the peculiarities of the speech above cited consisted in a kind of systematisation of words pronounced, complex sounds, such as *eil, aye, way*; for these the child substituted the sound *ss*. It will be the same for the sounds *ll* liquid; he will say *ss*; and for *ou* he will say *u*. Here it was not nasal obstruction which was the cause, but defective hearing from faulty ventilation of the tympana due to tubal obstruction. As a result of the operation the tubes and naso-pharynx were

cleared, and rhinolalia clausa and the faulty speech resulting from defective hearing were remedied.

The author narrated another case. A child aged five and a half, a supposed deaf-mute, had a bilateral tubal catarrh, large adenoids, and a spur of the nasal septum. Loud conversation was heard at a short distance; the child managed to repeat pretty much what was said to him. Was it not necessary to operate in such a case, if only to try the chance of relieving his ears a little, and most certainly his nose and pharynx, and thus to facilitate the acquirement of speech and encourage the general development and growth?

M. CASTEX said that deaf-mutes were not more frequently affected with adenoids than other children, and as their deafness was generally labyrinthine or cerebral in origin, curettage of the naso-pharynx only rarely cured it. Nevertheless the operation might be useful in improving the general health.

M. GROSSARD said that he operated on deaf-mutes affected with adenoids and nasal respiratory trouble as much to improve the general condition of the child as to better the vestiges of hearing which sometimes existed in the case of deaf-mutes.

#### REMOTE INFECTIONS IN OZENA.

BY M. A. CASTEX.

The author communicated some facts concerning remote infections in ozena. A woman, aged forty, presented enlargement of the submaxillary and carotid glands of the left side, which disappeared gradually *pari passu* with the improvement of the nasal fossæ.

A young man had digestive troubles, anorexia, frequent diarrhoea, etc., which disappeared when his ozena was improved by paraffin injections. Sufferers from ozena often have cerebral troubles, headaches, mental dulness, and eccentricities. Castex mentions suicide in the case of one of his patients. And so there have been recorded up to the present digestive, respiratory, glandular, ocular, and cerebral complications.

M. G. A. WEIL described a case which had occurred in Dr. Babinski's practice, and was related in Lumineau's thesis, of a woman attacked with aurial vertigo and mental dulness, who suffered also from atrophic rhinitis. Lumbar puncture cured the vertigo, caused the mental troubles to vanish, and improved the rhinitis. A free serous nasal discharge occurred after the operation.

M. KÖENIG mentioned pulmonary tubercular complications, which were very frequent according to some writers.

A BRONCHO-ŒSOPHAGOSCOPE WITH TERMINAL LATERAL ILLUMINATION;  
DETACHABLE.

EXHIBITED BY M. MÜSCH.

This instrument permits a little tube to be inserted in the wall of the principal tube, and intended for the passage of a stem lamp holder. The volume of the tube being distributed on both sides of the wall of the main tube, the calibre of the instrument is not appreciably increased. The lamp, "wheat-ear form," is placed at the lower extremity or beak of the endoscope. It illuminates the operative field through a fenestra situated on the inner wall of the small tube. Thanks to this arrangement one can operate with entire safety, without having to fear accidents arising from forceps and probes which one introduces into the endoscope, and the technique is much easier than with frontal illumination. Besides, anyone can, without special training, examine the lesion once this is in focus in the field of the instrument.

M. PIERRE CAUZARD said that the indications for bronchoscopy and œsophagoscopy were very frequent in laryngeal paralyses, especially when the cause of these paralyses was unknown. Endoscopy of the œsophagus and trachea enabled us to see alterations of the œsophageal walls (cancer), or compression of the trachea, bronchi, and œsophagus. It was possible to diagnose as mediastinal growths, glandular or other, tumours which were not pulsatile. If one observed in the endoscope a compression of the wall of the œsophagus or trachea, manifesting pulsation, it was necessary besides to recognise an expansile impulse of the tumour before one could be positive of aortic aneurysm. Œsophageal compression of aortic origin was usually met with at a distance of from 19 cm. to 25 cm. from the upper dental arch. The interest of the endoscopic method lay in the possibility of confirming a diagnosis only inferred by other methods. In his opinion, as far as practicable, œsophagoscopy, a more dangerous procedure than tracheoscopy, ought only to be undertaken after radioscopy. Radioscopy might, in certain cases, render œsophagoscopy unnecessary or contra-indicate it.

G. VEILLARD.

(H. CLAYTON FOX, *Trans.*)

## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

*Fourteenth Annual Meeting, held at Pittsburg, Pa., May 28, 29, and 30, 1908.*

DR. EWING W. DAY, *President, in the Chair.*

*(Continued from page 405.)*

### THE CLIMATE OF THE NORTH-WEST IN ITS ÆTIOLOGICAL AND THERAPEUTIC RELATION TO DISEASES OF THE NOSE, THROAT, AND EAR.

Dr. CHARLES NELSON SPRATT, of Minneapolis, Minn., presented this subject, summarising as follows: Acute and chronic inflammation of the respiratory tracts were frequent and worse during the winter months. These conditions were not due to cold, but to certain artificial conditions under which the individual lived from six to eight months—the artificial climate, which included crowding, dust, over-heated rooms with dry air, and deficiency of sunlight. Diseases of the ear, nose, and throat were common in the north as a result of the above conditions.

Dr. THOMAS J. GALLAHER, of Denver, Colo., referring to the word "catarrh," called attention to Bosworth's criticism of the term. He also spoke of Bosworth's work in which he pointed out the difference between so-called "catching cold" and absolute cold, and emphasised the importance of bringing about an immunity to this condition by proper methods of living. Persons going to the dry climate and high altitude of Denver experienced some inconvenience at first because of turgescence of the turbinated bodies, but equilibrium was soon established.

Dr. H. BERT ELLIS, of Los Angeles, Cal., thought it mattered little in what portion of the country one lived so far as catarrh was concerned. Other factors than changes in temperature entered into the condition.

### THE VALUE OF THE DIFFERENTIAL BLOOD-COUNT AND OF THE BACTERIOLOGICAL EXAMINATION OF THE AURAL DISCHARGE AS DIAGNOSTIC FACTORS IN CASES OF MASTOID INVOLVEMENT.

Dr. EDWARD BRADFORD DENCH, of New York City, in this paper called attention to the value of the differential blood-count in cases of suspected mastoiditis, referring to twenty-four cases previously



reported, in which the blood-count showed that in uncomplicated cases the highest leucocytosis was 25,200, with a polymorphonuclear count of 64 per cent. In other cases the leucocytosis ranged between 6000 and 20,000, and in no instance did the polymorphonuclear count reach 80 per cent. in uncomplicated cases. Later statistics show that in thirty-six cases, in no uncomplicated case did the polymorphonuclear count rise above 80 per cent. In all cases in which the polymorphonuclear count was above 80 per cent. the mastoid operation had already been performed, and this count was simply indicative of some further complicating lesions. In four cases the leucocyte count was over 20,000. One of the four died of meningitis; one was a case of simple mastoiditis in which, after operation, the polymorphonuclear percentage suddenly rose to 88 per cent., with a white count of 40,000. The next day, however, the polymorphonuclear count was 74 per cent. and the white count 16,000. Both the polymorphonuclear and the white blood-count were undoubtedly due to some sudden visceral complication. In the third case the increase in the polymorphonuclear count must be attributed to a similar cause, as it fell two days later to 61,000 and the white cells to 13,000. In the fourth case the white blood-count was 29,800 in a case of simple mastoiditis; the polymorphonuclear count was 71.4 per cent. These cases were detailed to show how misleading a single blood-count may be. In none of the cases cited was the differential blood-count of the slightest help in diagnosis.

The same problem was encountered in the consideration of the value of bacteriological examination of the aural discharge as determining the indication for radical interference in cases of middle-ear suppuration. From the bacteriological examination of the aural discharge in the cases cited, the author concluded that, inasmuch as streptococcus infection predominated, it was wise for the surgeon to bear in mind simply that, given a streptococcus infection, the possibility of serious mastoid involvement was greatly increased; that such involvement, however, was certain could not be decided by the bacteriological examination alone. Some of the classical symptoms indicative of mastoid involvement must be present before the mastoid operation should be advised.

Several important points had been clearly demonstrated by a study of the figures given in the paper: First, that in no single case of simple mastoid involvement was the increased leucocytosis or the increased percentage of polymorphonuclear cells sufficient to aid the surgeon in any way as to the probability of mastoid

involvement. Second, that while a streptococcus infection of the middle ear was, without doubt, more serious in character than some of the other infections, many of these cases recovered after free drainage of the middle ear had been established by a competent incision through the drum membrane. Third, that while the *Streptococcus capsulatus* infection was undoubtedly severe and insidious in character, and gave rise to few general symptoms, the frequency with which this infection could be overcome by free incision of the drum membrane was demonstrated by the fact that out of thirteen cases in which *Streptococcus capsulatus* infection was present, in only three was the mastoid operation necessary.

Involvement of the soft tissues of the neck, brain substance itself, or of the lateral sinus, would seem to be indicated by a rapid rise in the polymorphonuclear percentage, together with an increased leucocytosis. The author concluded that an increased polymorphonuclear percentage or an increase in the leucocyte count was of absolutely no value in determining the presence of pus in the mastoid in doubtful cases; that where these variations from the normal blood-count occurred in aural cases one of three conditions must be looked for, viz. some visceral lesion, some involvement of the soft tissues in the immediate vicinity of the wound, or some involvement of the intra-cranial structures, either of the brain substance or of the lateral sinus.

Dr. WENDELL C. PHILLIPS, of New York City, agreed with Dr. Dench that one should not rely upon the blood-count and bacterial examination in making a diagnosis to the exclusion of the clinical manifestations. They were valuable adjuncts and as such should be given full consideration. The examination of pus should not stop with the study of slides, but cultures should be made. It was interesting to note in what a large proportion of pure cultures the infection was streptococcic. This bore out the careful experiments made by Libman at Mt. Sinai Hospital, in which he found that pure culture mastoid and middle-ear suppuration is almost invariably streptococcic infection.

Dr. S. MACCUEEN SMITH, of Philadelphia, said that much as he valued the differential blood-count and bacterial examination of the blood, he believed them to be secondary in importance to clinical experience. He agreed entirely with Dr. Dench's conclusions.

Dr. CHARLES NELSON SEATT, of Minneapolis, said that the finding of bacteria in the blood was not necessarily an indication for opening the sinus. It was not uncommon to find cases in

which typhoid fever was complicated by purulent otitis media and mastoiditis, and yet very few of these cases came to operation and even fewer had sinus development. In all such cases the typhoid bacillus could be found in the blood.

Dr. HENRY O. REIK, of Baltimore, Md., took exception to the too broad generalisation by Dr. Dench from his experience with blood-counts. He agreed with him as to the secretions from the ear, but thought the blood-count would be of value in many instances where it was a question whether or not a case of simple mastoiditis should be subjected to operation. The diagnosis might be made without the blood-count, yet such a count might play an important part in the decision regarding operation. He cited two cases in point. In one case his associates had taken the ground that the condition was due to typhoid fever, despite the fact that the child had middle-ear infection and mastoid tenderness. In typhoid fever there is leucopenia, whereas in this case marked leucocytosis could be demonstrated. Operations showed clearly the wisdom of the decision based upon the blood-count.

## Abstracts.

### PHARYNX.

**Bell, James.**—*Total Excision of the Lower Jaw and Floor of the Mouth for Sarcoma of the Jaw.* "Montreal Med. Journ.," February, 1909.

Married woman, aged twenty-two, has had soreness of throat for four years but no other symptom until within the last year. Then were added tickling and scratching feeling in the throat. In six months she had been unable to swallow solids. The larynx, the upper part of the oesophagus, and the large area of the pharynx were removed as in the previous case, as in it, too, it was impossible to attach the upper and lower parts of the pharyngeal mucous membrane. Consequently the stump of the oesophagus was brought out beside the trachea but through a different opening. The patient had a smooth convalescence, with much less suffering than the previous patient. She feeds herself quite satisfactorily through a tube introduced through an opening in the neck.

There is no communication between the mouth cavity and the stomach. She is quite well and comfortable, and has a reasonable prospect of immunity from recurrence.

Since February, 1898, the writer has removed the larynx in eleven cases. Seven of these operations were for intrinsic cancer. In four the primary disease was in the pharynx, invading the larynx secondarily.

Out of the eleven, seven recovered. One of the seven died fifty-eight days afterwards from recurrence.

Of the four deaths, three were from pneumonia. In the other the surgeon could not get below the disease in his operation, and the patient died a few days later.

In all the cases that survived a satisfactory amount of whispering could be done. Some of them lived for several years, to die of other diseases. One had a recurrence in seven years. The rest are still under observation.  
*Price-Brown.*

**Wishart, D. J. Gibb.**—*Bronchoscopy and Œsophagoscopy.* "Canada Lancet," February 1909.

After a lucid description of the technique of the new methods of examining, operating upon, and removing foreign bodies from the larynx, trachea, bronchi, œsophagus, and stomach, the writer gives a history of several cases.

**CASE 1.**—Male, aged forty-six. Stricture of œsophagus, possibly malignant. There had been dysphagia, regurgitation, dyspnoea, and pain in chest for the previous three months. Under local anæsthesia the tube was passed to a point 29 cm. from the teeth, when a bleeding granular area was observed on the posterior wall almost closing the lumen. The subsequent history of the case confirmed the observation.

**CASE 2.**—Married woman, aged sixty-four. Laryngeal stenosis. Had a history of specific laryngeal stenosis of two years' standing. Ulceration had healed, but tracheotomy had been necessary six months ago. Evidence of dyspnoea was still present. The bronchoscope was used through the tracheotomy wound, and the tubes of the lungs examined. They were found quite patent, permitting an excellent demonstration of the usefulness of the instrument, and the extent of observation which it permitted.

**CASE 3.**—Œsophageal stricture. A boy, aged three and a half, was examined three weeks after swallowing sulphuric acid. The capacity to swallow was gradually failing. Under general anæsthesia an œsophagoscope was introduced and the œsophagus examined. Patches of whitened mucous membrane, some in process of separation, were found below the cricoid region. The instrument was passed without difficulty to a point  $17\frac{1}{2}$  cm. from the teeth, where the lumen sharply narrowed to the capacity of a straw, through which it was not deemed advisable to explore.

**CASE 4.**—Laryngeal stenosis in a girl, aged two and half years, two months after the onset of diphtheria. Intubations and tracheotomy had been done, the latter five weeks ago. It was found impossible, however, for the child to breathe without the tube. Examination by bronchoscope was made to diagnose between paralysis and stenosis. As a very narrow glottis coated with whitish membrane was found, together with Klebs-Loeffler bacilli, the diagnosis was conclusive and the tracheotomy tube re-inserted.

**CASE 5.**—A young man, aged twenty-six, swallowed some shell with the raw oysters. Scratching pains resulted in the region behind the larynx. The laryngoscope revealed nothing. Only liquids could be swallowed, and these with difficulty. The breath became offensive and there was sleeplessness and restlessness. Under a general anæsthetic the largest œsophagoscope was passed 19 cm. from the teeth, when a piece of oyster shell was discovered. By the careful use of a forceps the shell was seized. It came away in four pieces, leaving a jagged wound. The man made an excellent recovery.  
*Price-Brown.*

**Citelli, Prof. S.** (Catania).—*Further Account of a Case of Adeno-carcinoma of the Tonsil Operated on Five Years Ago.* "Bottelino delle Mal. di Gola, etc.," Florence, March, 1909, p. 50.

The author refers to his communication made to the Twelfth Congress of the Italian Laryngological Society at Turin in 1908. The case was one of an ulcerated tumour of the left tonsil which was adherent to the tongue. The growth was removed through the mouth, and the whole area gone over with the galvano-cautery. Microscopic proof was obtained as to its malignant nature. An unusual feature of the operation was that the enlarged sub-maxillary glands were left undisturbed, being treated only with a "resolving ointment." Most surgeons will agree with the author that "the result was truly unexpected," seeing that there was no recurrence for several years, and will be strengthened thereby in the opinion that a more extensive operation on the tongue, with removal of all glands, would probably have saved the patient. Recurrence took place in five years in the base of the tongue at the site of the previous adhesion. The patient declined the more extensive operation now proposed.

*James Donelan.*

**Hett, G. Seccombe.**—*On the Anatomical Varieties and their Bearing on the Treatment of Pathological Conditions of the Palatine Tonsils.* "Lancet," February 13, 1909.

An able and useful paper, giving a short explanation of the varieties of palatine tonsil from embryology and comparative anatomy, with explanatory diagrams. The mammalian pharynges examined by the author numbered 100 species and their tonsils showed a very interesting evolutionary series, exhibiting many of the stages seen in their development in the human embryo. Hett's observations confirm those of Killian. Hett's classification of varieties, based on a series of 1000 pathological tonsils, divides them into six clinical types: (1) imbedded, (2) projecting, (3) flat, (4) hanging, (5) tonsils with preponderance of anterior, middle, or posterior masses, or of a combination of these, and (6) the tonsil with marked lingual prolongation.

Regarding the anatomy of the tonsil in its relation to treatment, the importance of the supra-tonsillar fossa as a receptacle for foreign bodies and its connection with peritonsillar abscess are noted. The size of the tonsil is no criterion for the necessity of surgical interference, sepsis being the determining factor. The fact that the tonsil does not project is no proof that there is not a large tonsillar mass. Further, there seems to be a remarkable capacity of proliferation of any tonsillar tissue remaining in the earlier years of life. Hett advises the use of the vulsellum in conjunction with the guillotine. The plica triangularis may form an obstacle to the successful use of the guillotine. Remains of lymphoid tissue may form a nucleus for infection after removal of tonsils, so that other means must be used in conjunction. The ideal method of removal is undoubtedly enucleation.

*Marcel Yearsley.*

**Parkinson, J. Porter, and Carpenter, G.**—*Whooping-Cough.* "Proc. Roy. Soc. Med.," Section for the Study of Disease in Children, January, 1909, p. 37.

In the course of a discussion on whooping-cough the speakers mentioned called attention to the influence of adenoids on the disease.

The first-named stated that post-nasal catarrh may occur during the paroxysmal stage and lead to septic absorption; and the latter suggested that when epistaxis occurs during a paroxysm of coughing the hæmorrhage proceeds from adenoids in some instances. He advised that in all cases the naso-pharynx should be kept clean and free from catarrhal products by the use of alkaline nasal douches. *Dan McKenzie.*

## NOSE.

**Stirnimann, F.** (Lucerne).—*The Treatment of Acute Coryza.* "Münch. med. Woch.," December 29, 1908.

The author puts three or four drops of lysoform in the palms of the hands, rubs them together, and inhales four or five times the formalin vapour; this is repeated every two or three hours. The treatment is found unpleasant, but extremely effective. *Dundas Grant.*

**Delsaux, V.**—*Five Cases of Malignant Tumours of the Accessory Cavities of the Nose.* "La Presse Oto-laryngologique Belge," January, 1909.

Three of the tumours were sarcomatous, one was encephaloid cancer, and one tubular epithelioma. Each case was operated on by opening the sinuses and clearing out the neoplasm as completely as possible. In every case the growth rapidly recurred, and proved fatal in less than a year, in spite of a second operation.

The author remarks that these growths generally spring from the maxillary sinus. He concludes that total resection of the superior maxilla is the only operation which offers any chance of success; at the same time all the lymphatic glands which can be reached should be removed with their afferent vessels. *Chichele Nourse.*

**Manasse, P.** (Strassburg).—*On the Pathological and Clinical Features of Malignant Growths Involving the Nasal Accessory Sinuses.* "Zeitschr. f. Laryngol.," vol. i, Part V.

The author reports six cases in which malignant growths involved the accessory sinuses. The first three of these were squamous-celled epitheliomata originating in the antrum. The fourth and fifth also grew from the antrum; they were probably both endotheliomata, but the older portions of the growth had many of the characteristics in the former of epithelioma and in the latter of sarcoma. The sixth case was of much interest from a pathological standpoint, because it presented a combination of a benign epithelial with a malignant connective-tissue tumour. It involved the ethmoid and frontal sinuses.

In regard to the diagnosis of malignant growths of the antrum the finding of reddish-yellow coloured fluid on exploratory puncture may be of importance in distinguishing new growth from empyema.

In the treatment of such conditions the operation of Denker, which gives good access to the cavities of the nose, antrum, ethmoid, and sphenoidal sinuses, is often of service when the disease is not already too advanced. *Thomas Guthrie.*

**Walb, Dr., and Horn, Dr.**—*The Treatment of Diseases of the Accessory Sinuses of the Nose by Suction.* "Ärzt. Rundschau," xix, No. 8, S. 81. Quoted from "Zeitschr. für Ohrenheilk.," 1908, Bd. lvii, H. 1.

The authors have had an instrument constructed, similar to that of Muck and Heermann, which permits of the measurement of the amount of suction and of its regulation. They have treated a large number of acute and chronic cases by means of this instrument, and they find it of great value in diagnosis and in treatment. They were able to cure all their acute cases, and in some cases the chronic cases also improved.

W. G. Porter.

**Rydygier, A.**—*Further Experience in the Treatment of Rhino-scleroma with X rays.* Quoted from "Gazeta Lekarska," 1909, No. 3, "St. Petersburger med. Woch.," xxxiv, 1909, S. 191.

The author reports fourteen cases of rhino-scleroma (six affecting the nose and eight the larynx). Thirteen underwent treatment; they were all females between ten and twenty years of age. The period of treatment lasted from a few weeks to seven months. In one case thyrotomy was performed and the rays were applied through the wound. In one nasal case the diseased tissue was removed before the application of the rays. No operative treatment was applied to the remainder.

All the patients left the hospital either cured or greatly improved.

W. G. Porter.

**Gulliver, F. D.**—*A New Method for the Repair of Perforation occurring during the Submucous Resection of the Nasal Septum.* "Lancet," January 16, 1909, p. 166.

In the course of resecting a septum with an angular longitudinal deviation a perforation was produced. By means of a piece of muco-perichondrium a quarter of an inch square, cut from the redundant side and inserted between the muco-perichondrial flaps, the perforation was closed. Packing for twenty-four hours. Sutures were not employed. Result perfect.

Dan McKenzie.

**Donelan, J.**—*The Treatment of Chronic Suppuration of the Maxillary Antrum: An Operation and New Instruments.* "Lancet," June 19, 1909.

The author has abandoned the alveolar route except in a very few cases of acute abscess of dental origin, "and none of these were cured without eventual recourse to the intra-nasal method." For removal of the outer nasal wall he has devised a right and left rectangular chisel, and for the initial puncture an angular gouge, V in section. As regards the inferior turbinal, he brings forward anatomical arguments to bear against removal of its anterior end to facilitate entry to the antrum, and cuts through its middle portion with the gouge, sometimes also finding it advisable to remove the posterior end. Regular douching for from four to six weeks is necessary.

Macleod Yearsley.

**Weil, Arthur J.** (New Orleans).—*Nasal Causes of Headache.* "New Orleans Med. and Surg. Journ.," May, 1909.

Three different classes of nasal disease each cause headache, and each

by a different mechanism: (1) Diseases attended with nasal occlusion; (2) deformities or disease causing pressure of the parts one against the other; (3) affections of accessory nasal cavities. The author repeats Hajek's warning that no headache following influenza should ever be declared neuralgic until a thorough examination of the sinuses has excluded their implication.

Macleod Yearsley.

## LARYNX.

Seifert (Würzburg).—*Contusion of the Larynx*. "Revue Hebd. de Laryngologie, d'Otologie, et de Rhinologie," November 7, 1908.

The rarity of contusion of the larynx justifies the publication of every case; the following is the sixteenth instance on record.

A ferry-man received a blow on the neck with the handle of an oar, which caused severe pain and increasing dysphagia. When admitted to the hospital on the twelfth day after the accident he was seriously ill and hardly able to swallow. The pharynx, as well as the base of the tongue and upper part of the larynx, were in a state of inflammatory cedema; there was an extravasation of blood in the soft palate and the adjoining region, and sloughing of the lower part of the uvula and of the left posterior pillar.

The treatment consisted of rest in bed, the application of cocaine and alypin locally to render swallowing possible, and the administration of nourishment in the form of cold liquids. Recovery was rapid. The author disapproves of scarifications, which may lead to secondary infections. In the present case secondary infection probably occurred after a digital examination made by another medical man five days after the accident.

Chichele Nourse.

Hardy, Dr. H.—*A Foreign Body removed from a Bronchus of the Second Order by means of the Bronchoscope*. "St. Petersburger med. Woch.," 1909, xxxiv, S. 201. Quoted from "Finska Läkaresällskapets Handl.," 1909, No. 3.

In a patient who had worn a tracheotomy tube for thirty years on account of a syphilitic stenosis, the tube had become separated from the plate and slipped down the trachea. In an attempt to withdraw it by means of an iron wire the patient had pushed it farther in and also injured the trachea. The author succeeded two days later in removing the tube by indirect bronchoscopy. The tube had reached a bronchus in the middle lobe of the right lung.

W. G. Porter.

Bell, James.—*Excision of Larynx and Pharynx for Carcinoma*. "Montreal Med. Journ.," February, 1909.

The patient, a female, unmarried, aged forty-six, had suffered from dysphagia and hoarseness for eight months. The difficulty in swallowing steadily increased. She was referred to Dr. H. J. Birkett for laryngoscopic examination. He found an area of epithelioma at the upper end of oesophagus and pharynx, closely adherent to lower part of larynx.

In operating, the larynx, the upper portion of the oesophagus and the involved area of the pharynx were removed in one mass, without preliminary tracheotomy. The stump of the trachea was fixed to a skin wound



just below the lower end of the vertical incision. The removal of pharyngeal tissues was not complete, and an attempt was ineffectually made to connect the mucous membrane of the upper and lower pharynx, in order to retain communication between the œsophagus and the mouth cavity. Consequently it is necessary to feed the patient by tube, and it is doubtful if she will ever be able to swallow satisfactorily. Although she has suffered a good deal of pain, she is in other respects doing well, and Dr. Bell has little fear of recurrence of the disease.

Price-Brown.

**Brunetti, F., jun.** (Padua).—*Anatomical and Anatomico-Pathological Researches on the Nerve-Endings in the Intrinsic Muscles of the Human Larynx.* "Archiv Ital. di Laringologia," April, 1909, p. 49.

The author gives a full account of the nerve-endings in the normal larynx. In a large number of his preparations he found the terminal nerves arranged in two reticular layers—one epi-lemmal, the other exceedingly fine, being in immediate contact with the muscle substance. For this layer he proposes the term "peri-muscular." As a general rule each muscular fibre has only one nerve-ending, the author's experience agreeing with that of Grabower that two nerve-endings for one muscular fibre are very rare. The nerve-endings themselves assumed, as elsewhere throughout the body, for the most part the plate form. The pathological specimens appear to have been taken mostly from cases of chronic laryngitis, such nerve changes as were present being degenerative and accompanied by the disappearance of the functional elements. In the opinion of the author these changes explain the "catarrhal paralysis" seen in chronic laryngitis.

There is a summary of previous researches as well as a fairly full bibliography. The author does not appear to be aware of the investigations and papers of Horsley and Semon on the innervation of the larynx and the changes produced by disease.

James Donelan.

**Jacob, L.** (Strassburg).—*A Case of Croupous Laryngeal Tracheitis without Loeffler's Bacillus.* "Münch. med. Wochenschr.," February 23, 1909.

The patient was a woman, aged thirty-three, in the sixth month of gravidity. Her attack commenced with hoarseness, without other symptoms. This increased, and there gradually developed dyspnoea, pain in swallowing, and cough. The patient became very ill, the face and hands cyanotic; respiration was very difficult and accompanied by loud stridor. There was in-suction of the intercostal spaces, pulse frequent and soft, temperature 39.1° C. (102.4° F.). The mouth and nose were quite free, but the mucous membrane of the entrance of the larynx was swollen and red, the lateral walls being covered with a whitish membrane, while the lining of the trachea was of a greyish-white. There was complete absence of any swelling of the cervical and submaxillary lymphatic glands. Antitoxin was administered, ice applications, cold drinks, and the continuous inhalation of steam, and the internal exhibition of the unisated solution of ammonia was followed by the expectoration of the membrane, with diminished stridor and cyanosis. Bronchitis developed, but gradually disappeared, and the patient was soon quite well, with the exception of a little hoarseness. Bacteriological examination of the membranes was completely negative as regards diphtheria bacilli and showed small cocci

and diplococci. The case presented the features of diphtheritic croup, but there was absence of glandular enlargement and of involvement of the nose, while the fever was rather high. The author refers to a paper by Jacod in *La Semaine Médicale*, 1907, No. 43, and to a recent work on "Pneumococic Infection of the Upper Air-passages" by Reiche and Schomerus in the *Reports of the Hamburg State Infirmary* for 1907.

Dundas Grant.

## EAR.

Gomperz, B. (Vienna).—*Politzerisation in Children*. "Arch. f. Ohrenheilk.," Bd. 76, Heft 1 and 2.

In a recent article Walb has described a method of Politzerising young children who refrain from crying at the moment when we want them to cry in order to inflate. An assistant passes his finger or a spatula to the base of the child's tongue, and during the retching movements set up thereby the bag is compressed.

Gomperz, with the same object, has the child's head held back, and, after the nozzle of the bag is fitted into the nostril an assistant syringes some water into the child's mouth.

The author has a strong belief in the value of Politzerisation in the treatment of acute otitis in early infancy, but he does not employ inflation until the acute inflammatory phenomena are on the wane. In very young infants the bag should be compressed in the smallest possible manner.

Dan McKenzie.

Frey, Dr. Hugo (Wien).—*On the Question of so-called Recurring Mastoiditis*. "Monats. für Ohrenheilk.," Jahrg. 42, Heft 10.

In an interesting article under this title Dr. Frey describes two cases whose history and course he gives at length, together with a critical survey on the probable sequence of pathological events which took place.

The first case is that of a boy, aged five and a half, who in January, 1901, had an attack of influenza which was followed by an inflammation of the middle ear on the right side. This condition subsided after a "long while," but at Easter a periosteal abscess occurred necessitating an incision, the result being a complete cure. Four weeks before his admission to Politzer's clinic in November, 1901, he had had pain in the left ear, which subsided uneventfully. For the previous six days pain had again occurred on this side, accompanied with fever and some post-aural swelling.

On examination the right ear was found normal excepting the fact that it showed evidences of past recent, though now quiescent, inflammation. The left ear was the seat of a general inflammation; there was a purulent discharge from the meatus and a fluctuating swelling behind the ear. The radical operation was performed, and after running a quite usual course the discharge ceased and the wound was completely healed all within four weeks.

In June, 1902, the patient was again brought to the clinic, and his mother reported that he had been feverish and complained of his throat for the last few days. In and around the operation wounds on both sides was a fluctuating area of inflammation, which, however, caused very little pain or tenderness. On June 22 both sides were operated upon. Pus was only found between the soft parts and the bone. On the left side the bone in the neighbourhood of the original operation was found

so soft that it could be easily removed with a sharp spoon. The antrum was exposed on the right side but contained no pus. Within three weeks complete healing supervened.

The second case occurred in Dr. Frey's private practice, and relates to a boy, aged four, whom he saw on February 2, 1905, and whose condition necessitated a paracentesis on the left side that day. A profuse purulent discharge followed for some three days, after which, in spite of his directions, he saw nothing of the little patient for more than a week, when he was again brought to him with a swelling behind the ear affording a typical picture of an antral abscess. The discharge from the meatus had ceased. At the operation on the next day a collection of pus was found in the antrum. By March 15 the wound was quite healed.

Towards the end of April he had an attack of measles, and was seen by Dr. Frey on May 2, who found some infiltration and swelling in the site of the old post-aural scar, which had commenced some twenty-four hours before; temperature 37.9° C. This swelling burst spontaneously the next day, discharging a small quantity of pus. On examination the adjacent bone was found healthy and the cavity in it resulting from the previous operation filled with granulation tissue. Healing took place within thirteen days.

After a detailed description of the conditions found during all these procedures, followed by a commentary thereon, the author summarises his views on the subject by stating that he does not consider these cases, strictly speaking, should be regarded as "recurring mastoiditis," since too long an interval of time had elapsed between the attacks, notably in the first case. He would rather describe them as cases only of apparent recurrence due in reality to "breaking down" of the granulation tissue which fills the cavity in the bone resulting from the operation, and which should normally become transformed first into fibrous tissue and then later become ossified.

Alex. R. Tweedie.

**Urbantschitsch, Victor.**—*On the Electrical Treatment of the Ears.* "Monatschr. f. Ohrenheilk." Year 43, vol. i.

In a long article of twenty-four pages the author gives the result of his experience of this method of treatment for the relief of deafness arising from past middle-ear catarrh and suppuration, and also its effect on tinnitus.

The communication consists in a detailed account of fifty such cases, accompanied by twelve charts, to which is added a commentary and his views as to the value of this method.

The hearing was apparently made worse in at least two cases, and in one the tinnitus increased in intensity. In more than half the number of ears thus treated no improvement of the hearing or tinnitus resulted, but the author claims a varying measure of success in the remainder as regards hearing. This improvement, however, was only such as can be described as increasing the range of perception only by some 5 cm. in fourteen ears, 10 cm. in eighteen ears, 15 cm. in three cases, 20 cm. in four ears, whilst in two instances he obtained an improvement of 25 cm. and 30 cm., and in one as much as 85 cm. He considers the tinnitus was relieved in thirty-three cases and absolutely cured in four. A current of from  $\frac{1}{2}$  to 2 ma. was employed, derived from a small portable dry galvanic battery, which the patients used themselves, one application a day of some thirty minutes' duration generally being prescribed, the number of applications in some cases being as many as sixty-six.

A combination of these methods with politzerisation, massage, or the

passage of bougies is recommended, and faradisation may be substituted for the continuous current, at times with advantage.

The article is valuable as an accurate and exhaustive record of results, but one cannot help wishing that some form of "control" test were possible in order to corroborate the real relation of effect to cause.

*Alex. R. Tweedie.*

**Homer, Dupuy.**—*Otogenous Intra-cranial Complications in Children; Presentation of a Case.* "New Orleans Med. and Surg. Journ.," January, 1909.

The author considers extension to intra-cranial structures from suppurations in the temporal bone from (1) perforations through the tegmenta tympani et antri and the sulcus of the lateral sinus; (2) through natural channels, along the facial and auditory nerves, cochlea, and semi-circular canals; (3) through the blood and lymph-vessels. He points out the vulnerable area of the petro-squamosal suture, and the "safety-valve action" of the squamo-mastoid suture. The case is described of a male child, aged five, with lateral sinus thrombosis and extra-dural abscess, who recovered after operation.

*Macleod Yearsley.*

**Smith, S. MacCuen.**—*Purulent Disease of the Middle Ear; the Treatment of Meningeal, Sinus, and Labyrinthine Complications.* "The Therapeutic Gazette" (Detroit), March 15, 1909.

Chiefly a review of the best methods; contains nothing new.

*Macleod Yearsley.*

**Dench, E. B.** (New York).—*A Case of Sinus Thrombosis, following removal of Granulation Tissue from the Middle Ear; Excision of the Internal Jugular Vein; Recovery.* "Arch. of Otol.," vol. xxxvii, Nos. 3 and 4, 1908.

Granulations were removed by the house-surgeon. The temperature rose in the evening to 104.5° F., was normal next morning, but suddenly rose again with chilliness to 106° F. There was leucocytosis and a polymorphonuclear percentage of over 82. The radical operation was performed and the sigmoid sinus was found on exposure to contain a dense clot. On its removal blood came from the torcular, but not from below. The jugular vein was excised up to about half an inch below the base of the skull. The temperature never rose above 102° F. after the operation, the recovery being uninterrupted. The clot in the sinus and upper portion of the vein contained streptococci.

*Dundas Grant.*

**Shambaugh, G. E.** (Chicago).—*The Membrana Tectoria and the Theory of Tone Perception.* "Arch. of Otol.," December, 1908.

The writer disposes of the membrana basilaris as the organ of resonance for a number of reasons, including its absence in regions of the cochlea to which the rods of Corti extend, in the pig, at least, and its being irregularly hampered by a blood-vessel attached below it. The membrana tectoria is graduated in length from below upwards in the cochlea, and is presumably easy to be set in vibration by the oscillations of the endolymph. He approves of Hardesty's suggestion that although a considerable part of the membrana tectoria may oscillate under the action of sound-waves, only those portions which are in tune with the components of the sound will oscillate through sufficient extent to touch the hair-cells above which they lie.

*Dundas Grant.*

**Biggs, G. L.** (London).—*A Case of Cerebellar Tumour involving the Auditory Nerve.* "Arch. of Otol.," December, 1908.

The patient, a boiler-maker, with right-sided deafness of seven years' duration and gradual in onset, developed headache, vomiting and optic neuritis. There was slight anaesthesia of the fifth nerve, no facial paralysis, but sensory ataxy in both hands and Rombergism to the right. Nystagmus appeared later, slow to the right side with fine movements to left. The signs of a nerve-deafness were marked. A large infiltrating sarcoma was found which involved the anterior part of the right cerebellar region and was attached above to the tentorium. *Post-mortem* examination revealed that it had involved the nerve and extended into the internal auditory meatus.

Dundas Grant.

**Bloch and Hechinger.**—*Anosmia in Temporo-Sphenoidal Abscess.* "Arch. f. Ohrenheilk.," Bd. 76, Heft 1 and 2.

The cortical centre for smell is bilateral and situated in both temporo-sphenoidal lobes. It is curious, therefore, that of all the many cases of otitic temporo-sphenoidal abscess recorded, so little mention is made of any interference with the olfactory sense. There are, indeed, only two cases on record, and now the authors report a third. In this case there was a left-sided temporo-sphenoidal abscess evacuated by operation, and one of the symptoms was well-marked anosmia on the same side as the abscess.

Of the other recorded cases, in the one the abscess was right-sided and the anosmia right-sided also; in the other the abscess was on the right side and the anosmia on the left.

The anosmia in the case reported by the authors might have been diagnosed as hysterical, for there was a considerable anaesthetic area of the cutaneous surface of the body, and the anosmia did not entirely clear up for five years after the operation. The diagnosis of hysteria is, however, rejected, because the cutaneous anaesthesia was not exactly unilateral, but affected "whole regions" of the skin; and the tardiness of recovery manifested by the olfactory symptom is explained by assuming that the lesion of the olfactory cortical centre was "deeper" than usual.

Dan McKenzie.

**Hawthorne, C. O.**—*The Cerebral and Ocular Complications of Anæmia and the Probable Relationship of these to Thrombosis.* "Lancet," September 19, 1908.

In the course of a general discussion of the subjects mentioned in the title, the author offers a new explanation of the occurrence of optic neuritis and ocular paralysis in suppuration of the middle ear. As Messrs. Barr and Rowan have shown, these events may complicate aural suppuration without any manifest intra-cranial complications, but the author suggests that it is an intra-cranial complication, nevertheless, which is responsible for these phenomena, namely, mild sinus thrombosis (which presumably stops short of general septic infection because the primary focus is removed, either by successful antiseptic treatment of the aural disease through the meatus, or by the performance of the radical mastoid operation).

Dan McKenzie.

**de Milly** (Orleans).—*A Case of Otitic Cerebro-spinal Meningitis; Radical Mastoid Operation; Cure.* "Revue Hebdomadaire de Laryngologie, d'Otologie, et de Rhinologie," December 5, 1908.

The patient was a woman, aged twenty-five, who had been the subject

of chronic suppuration of the left middle ear for ten years. A radical mastoid operation was performed on account of the sudden onset of left facial paralysis. The mastoid process was eburnated, and the antrum obliterated; the attic contained granulations.

Four days after the operation the temperature and pulse rose, and the patient complained of slight headache at the nape of the neck and the left side of the head. She occasionally vomited, the neck was slightly retracted, and a *tâche cerebrale* could be obtained, but there were no ocular or other signs, and the mental condition remained good. This state of things continued unchanged for a week. The cerebro-spinal fluid obtained by lumbar puncture was cloudy, and contained numerous polynuclear cells, but no micro-organisms. It was sterile when inoculated on a tube of blood serum.

The treatment consisted in lumbar puncture repeated daily; subcutaneous injection of electrargol (10 c.c.), and finally, injections of 5 c.c. of electrargol into the spinal canal. After the second of these injections the headache and vomiting disappeared, and the temperature became normal. *Chichele Nourse.*

**Marsh, F.** (Birmingham).—*Treatment of Facial Paralysis due to Division of the Facial Nerve in the Mastoid Operation.* "Brit. Med. Journ.," June 5, 1909.

Two cases of anastomosis of the facial nerve in the aqueduct of Fallopius are here described. The cases show—(1) that if division of the nerve is recognised at the time of operation careful adjustment will probably result in restoration of function; (2) that if division has not been recognised, the wound should be re-opened and the nerve ends adjusted at the earliest possible opportunity; (3) that if a careful adjustment has been made a second operation should not be undertaken within three or four months; (4) that this method should be tried before anastomosis with the hypoglossal or spinal accessory nerves is attempted, the results of which are not always gratifying. [Surely "anastomosis," which is derived from "*ἀναστροφή*"—to furnish with a mouth," is not a word that should be used for the junction of solid nerves?—M. Y.]

*Macleod Yearsley.*

**Fulton, F. T.**—*The Serum Treatment of Epidemic Cerebro-Spinal Meningitis, with a Report of twenty-two Cases.* "Boston Med. and Surg. Journ.," October 22, 29, and November, 5, 1908.

This long paper is quoted because in four cases out of nineteen there were ear complications. In one case only did recovery result without permanent impairment of hearing; the other three recovered with total deafness, two in both, one in one ear.

*Macleod Yearsley.*

**Anton, W., and Imhofer, R.**—*The Case of Deaf-Mutes in German Bohemia.* "Prag. med. Woch.," 1909, xxxiv, S. 255.

In European countries there are 7·9 deaf-mutes to 10,000 inhabitants; during the last few years the average in Bohemia has been 7·8 per 10,000, the smallest number occurring in Prague—1·92—and the greatest—21·1—in the region Schüttenhofen in the south-western part of Bohemia. The northern part of Bohemia is relatively free from deaf-mutes. This confirms the rule that deaf-mutism, like cretinism, flourishes in mountainous regions; for instance, in Switzerland it reaches the colossal figure of 24·5 per 10,000 inhabitants.

There are four institutions in Bohemia for teaching deaf-mutes, which receive between them 80,000 kronen a year. These are quite insufficient to deal with the large number of deaf-mutes, and until more are provided many children will grow up, as they have done in the past, utterly without education. The authors recommend that a doctor should be sent to those regions where there is a greater incidence of deaf-mutism to study its cause; to visit each deaf-mute child personally. Further, they recommend that teachers should be sent to these regions who could commence the instruction of these children, which could be continued with more success later in an institution for teaching deaf-mutes.

W. G. Porter.

**Grazzi, Prof. V.**—*Concerning certain Parasitic Diseases of Corn capable of being communicated to the Human Ear: A Contribution to the Study of Oto-mycosis.* A communication made to the Royal Academy of Georgofili, of Florence, in the usual Public Assembly of January 3, 1909. "Practical Oto-rhino-laryngology," No. 1, 1909, Milan.

In treatises and in monographs dealing with otology certain species of Aspergilli (*e.g.* *A. nigricans*, *flavescens*, *fungigatus*) are pointed out as the agents of such a state of aural disease. These only are mentioned in medical literature and thus acquire a special importance. According to the personal observations of Prof. Grazzi, other cryptogams are capable of attacking the external auditory passage. Even in 1886 Prof. Grazzi had described in his "Manual of Otology" a case of parasitic external otitis produced by *Ustilaga carbo* or the "grain carbuncle," a case which remained, as it should not have done, unnoticed.

Another more recent observation comes now to confirm the first; in this the author has been able to recognise as the agent of the otomycosis yet another of the Ustilagina, the *Tilletia teris*, commonly called *volpe*, or *carbo del grano* (grain fox or rot).

Arguing from the description of this new case the author discusses the circumstances which favour the development of such vegetable parasites in the meatus, which constitutes, so to speak, a veritable hot-house, admirably suited to the culture of the spores of the Aspergilli and of the Ustilagina. These fungoid growths never pass further in than the tympanic membrane, the outer surface of which is, however, attacked in the more serious cases. As a matter of fact these parasites are, fortunately, according to the experimental observations of Ferreri, of Rome, not capable of developing in the middle ear.

All those who suffer from constant irritation of the auditory passage or from abnormal discharge, whether chronic or intermittent, should adopt special precautions (as, for example, the closing of the meatus with gauze or cotton-wool) before exposing themselves to the particles of grain-dust which, especially if the grain be in a damaged state, contain a considerable number of spores. Moreover, everyone who has to do with corn should wash the hands and uncovered parts of the body with soap or disinfectant so as to prevent the contagion from being carried to his own ears.

The best and most rapid method of curing oto-mycosis consists in first cleansing the auditory meatus by washing it with sterilised tepid water with a third part of alcohol added, and then repeatedly introducing peroxide of hydrogen. Such a medicament acting as a dehydrating solvent quickly destroys mycelium and the spores.

Dr. F. Di Colo.

## MISCELLANEOUS.

**Herzberg, S.**—*Dr. Spengler's "IK" Treatment.* "Münch. med. Woch.," February 2, 1909.

The author speaks highly of the treatment of tuberculosis by means of "IK" (Immunkörpern) namely, immunising bodies said to be derived from the red blood-corpuscles. He advances the opinion that this treatment cures advanced tuberculosis of the lungs in a strikingly short time, that in all cases it effects a cure, if slight or only moderately severe. [Further confirmation of these remarkable results will be looked for with interest.]  
*Dundas Grant.*

**Spengler, C.** (Davos).—*Tubercle Immune Blood, Tubercle Immunity, and Tubercle Immune Blood Treatment.* "Münch. med. Woch.," September 29, 1908.

The author is of the opinion that the immune bodies are chiefly developed in the red blood-corpuscles, that they consist of lysines and antitoxins, that they can be presented chemically pure and are free from albumen. These immune bodies may be separated and used for the purpose of treatment.  
*Dundas Grant.*

**Taege, K.** (Freiburg).—*Iron as a Substitute for Bismuth in X-Ray Work.* "Münch. med. Woch.," April 13, 1909.

The form recommended is the red oxide of iron, which is very much cheaper than carbonate of bismuth and is free from toxicity.  
*Dundas Grant.*

## REVIEWS.

*Medical Greek, Collection of Papers on Medical Onomatology, and a Grammatical Guide to Learn Modern Greek.* By **ACHILLES ROSE.** New York: 1908.

Those of us who possess a little literary fastidiousness, and who take some pleasure in looking back to the dismal hours spent over the rudiments of the Greek and Latin languages, will sympathise with Dr. Achilles Rose in his antipathy to the barbarisms which have found their way into medical nomenclature, and are continuing to do so with increased rapidity day by day. It will be interesting to them to read his vocabulary of words taken from the German Anatomical Society's revised anatomical nomenclature and compare them with the Latinised Greek names supplied by Dr. Papaioannou. They will probably look with interest to see how he deals with the words "epithelioma" and "endothelioma," as well as "anastomosis," but unfortunately these common words are not to be found there; no doubt in another edition he will supply the omission. The discussions on the use of the termination "itis," and on the spelling of "Polielinie," will also be read with gratification. The appendix by Dr. Herbert Krüger, affording a brief guide to the learning of modern Greek for those who know classical Greek, will also commend itself, and those who do not know it, or know very little, may be tempted thereby to increase their knowledge and add to the innocent enjoyments of their lives. Several controversial letters are



introduced, and one eminent writer dwells upon the impracticability of eliminating the hybrid and other irregular pseudo-Greek words, which are stigmatised by a Greek friend of the authors as ἑλληνοφανής, including, as instances, the words "bicycle" and "telegram." It is obvious that a complete revision is beyond the limits of possibility, though here and there improvements may be made, and it is devoutly to be hoped that in the future the principles initiated by Dr. Rose may be applied more often than has been the case hitherto. If Dr. Rose will give us good vocabularies, with reasons appended, and some general statements of principle, he will earn our sincere gratitude, more especially if he offers it to us with less controversial matter than in the present little book, which, however, is all the more animated and readable on account of its presence. Some of our readers might be glad to be acquainted with the existence of a little work entitled "Sprechen Sie Attisch," by Dr. E. Joannides, published by Kochs, of Dresden and Leipzig, in which modern German dialogues are accompanied by their equivalent in Greek. We recommend this inspiring little work to our readers.

D. G.

*Der Otitische Kleinhirnsabszess (Otitic Cerebellar Abscess).* By Dr. HEINRICH NEUMANN, Assistant in the University of Vienna. Leipzig and Vienna: Franz Deuticke.

The most striking of the recent advances in otology is the study of the suppurative diseases of those peculiar organs of equilibration the labyrinth and cerebellum. Jansen and Hinsberg have done more than any others to show to what operative interference the labyrinth may reasonably be submitted, and Ókaka formulated the methods of diagnosis and treatment of cerebellar abscess as known a comparatively few years ago. Bárány's work at Vienna has, however, awakened a new and increased activity by his investigation into the study of nystagmus in relation to the labyrinth and cerebellum. His able fellow-worker, Neumann, has introduced several valuable novelties into aural surgery, and we are now indebted to him for a re-statement of our knowledge of cerebellar abscesses, with the addition of such methods of arriving nearer to certainty as their study in the light of neurology, and what we may call the "new labyrinthology," provides us with. The work before us is of moderate bulk and extremely clear in expression, so that it will be read with great ease even by those to whom the reading of involved German is a weariness to the flesh. It is earnestly to be hoped that some publisher will induce one of our *cofrères* to translate into English a book like this, which is certain to be in great demand among otologists, neurologists and surgeons over the whole world.

The statistics produced show that cerebellar abscess, though not absolutely of very frequent occurrence, is more frequent than is generally supposed, and further, that in about 50 per cent. of cases the infection takes place through the labyrinth. In most of the remaining cases it is associated with and probably secondary to thrombosis of the sigmoid sinus. The symptoms are reviewed in the light of recent neurological research, and the diagnostic value of the study of nystagmus, whether spontaneous, caloric, or rotational (*sit venio verbo*) is particularly enforced. It is stated that whereas in commencing circumscribed labyrinthine disease the nystagmus is most marked towards the affected side, in diffuse destructive labyrinthitis it is *never* to that side. In cerebellar abscess it is often greater towards the diseased one. When

nystagmus, previously greatest towards the sound side, changes to one greater towards the diseased one, the inference is very strongly in favour of a diagnosis of cerebellar abscess. In view of the tendency to sudden death by extension to the "nervus vital" the early diagnosis of this disease is necessarily of the utmost importance, and it cannot be denied that Neumann's work carries us a long step forward in this direction.

*Dundas Grant.*

*Practical Guide to the Diseases of the Throat, Nose, and Ear for Senior Students and Junior Practitioners.* By WILLIAM LAMB, M.D., C.M. Edin., M.R.C.P. Lond. Second edition. London: Baillière, Tindall and Cox, 1909.

Dr. Lamb's thoughtful little work on the examination of the throat, nose, and ear, which appeared in 1904, has evidently commended itself to those for whom it was intended, and it is with pleasure that we now see it in its second edition. Its contents now occupy 322 instead of 152 pages, and include some sections on treatment. These need not be reviewed in detail, but it may be stated that they are well-weighed and condensed and contain in a few words information which some larger works scarcely offer. The projecting atlas in relation to adenoid operations may be cited in this connection (p. 59), as also the hypertrophy of the anterior or lower lip of the hiatus semilunaris producing an apparent duplication of the middle turbinal (p. 110). The author refers his readers to more extensive works for the details of such operations as Killian's radical operation for chronic suppuration in the frontal sinus, and the operations required for the more serious intra-cranial complications of middle-ear suppuration. Those who desire a reliable introduction to the subjects indicated in the title may safely entrust themselves to Dr. Lamb's guidance.

*The Surgery of the Ear.* By S. J. KOPETZKY, M.D. New York: Rebman Company, 1908.

Advances in the surgery of the ear have during the past few years been so numerous and important that the need of a work devoted exclusively to the subject is called for. The author, with commendable perseverance, has produced such a book, which should prove of service to both the general practitioner and the specialist. A point of great value in the work before us is that the author has tested the various surgical procedures which he details, and that no operation is described which he has not himself performed upon many occasions, and whose merits he has not weighed in the balance.

Many of the illustrations are particularly good, although a few err on the side of being somewhat fanciful.

The references to the literature of the various subjects discussed are extensive, but it is to be regretted that the author ignores much of the work done by British surgeons and aurists in the advancement of intra-cranial labyrinthine and mastoid surgery. Throughout the volume the references to British work are unjustifiably few and far from complete.

Taken as a whole, however, the book is a valuable and useful contribution to otology, and should be read by all aural surgeons.

The chapters devoted to a description of the radical mastoid operation, the surgery of the meninges, and the surgery of brain abscess, are particularly good.

*W. Milligan.*

THE  
JOURNAL OF LARYNGOLOGY,  
RHINOLOGY, AND OTOTOLOGY.

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**THE HISTOLOGY OF NASAL ACCESSORY SINUS  
SUPPURATION.**

*(A Comparison of the Simple Inflammatory Processes in the Upper  
Respiratory Tract, including the Middle-Ear Cleft.)*

BY J. S. FRASER, M.B., CH.B., F.R.C.S.E.,

Assistant Surgeon Ear and Throat Department, Royal Infirmary, Edinburgh;  
Lecturer on Diseases of the Nose, Throat and Ear, School of Medicine  
of the Royal Colleges, Edinburgh.

THE object of this paper is to show that the changes which occur in the mucous membrane of the accessory sinuses in simple acute and chronic inflammatory conditions are analogous to those which take place in the nose in catarrhal and suppurative rhinitis, and in the middle-ear cleft in catarrhal and suppurative otitis media; secondly to bring forward evidence in favour of the view that these processes occur first of all in the nose and affect the pharynx, accessory sinuses, and middle ear by direct extension, and further that there is no essential difference between what is called "catarrh" and what is called "suppuration," as one condition passes insensibly into the other.

Under normal conditions the accessory sinuses contain air, while the lining membrane is coated with a delicate layer of mucous secretion; it is important to remember that the cavities are lined by mucous membrane continuous through the ostia with that of the nasal cavities. We are all aware of the fact that an attack of coryza is frequently followed by more or less catarrhal pharyngitis, laryngitis, and even tracheitis, and it seems probable that the

mucosa of the sinuses takes part in any changes which the mucous membrane of the nose may undergo. Harke, E. Fränkel, and Oppikofer on the one hand think that sinus suppuration is the direct consequence of the causative disease, whereas Zuckerkandl, Hajek, Lack, and Goetjes are of opinion that most cases are due to the spread of a catarrhal process from the nose. It is hardly necessary to say that the accessory sinuses are not always affected by an attack of acute rhinitis, just as the middle-ear cleft is not involved in every case of measles or scarlet fever. On the other hand it frequently happens that although the catarrhal process in the nose may have subsided, the inflammatory condition has continued in the maxillary antrum or in the tympanic cavity. It has been frequently stated that cases of maxillary antrum suppuration, which have been treated and apparently cured by alveolar puncture, often relapse during an attack of coryza, and this fact supports the view that the mucous membrane of the sinuses takes part in the inflammatory processes which have invaded the nasal cavities. In regard to the physical conditions which obtain in the accessory sinuses, it is necessary to call attention to the fact that the ostia are very small in proportion to the size of the cavities they drain, and further that these ostia are, in the case of all except the frontal sinus, very badly situated for drainage by gravitation. Under normal conditions drainage is probably carried on by ciliary action alone, but in diseased conditions the epithelium is not infrequently damaged, and under such circumstances gravitation syphonage and suction may come into play (Yankauer).

#### HISTOLOGY OF THE NORMAL MUCOSA OF THE ACCESSORY SINUSES.

In dealing with specimens obtained from the *post-mortem* room it is an exceedingly easy matter after formol fixation to strip the mucous membrane from the underlying bone with a small blunt dissector such as that used in the submucous resection of the septum, and even during operation on a diseased sinus it is often possible to detach large areas of thickened mucosa in the same way. Oppikofer lays stress on the examination of large pieces, as varying pathological conditions may be found at different parts of the mucous membrane obtained from the same sinus; this statement is confirmed by Goetjes. The normal mucous membrane consists of two layers—superficial epithelium and submucous connective tissue, separated by a delicate basement membrane (Figs. 1 and 2). The surface layer is composed of ciliated cylindrical cells with a deeply



FIG. 1.—Normal mucous membrane from maxillary antrum.  $\times$  about 50 diam. 1. Ciliated mucous membrane. 2. Submucous connective tissue.

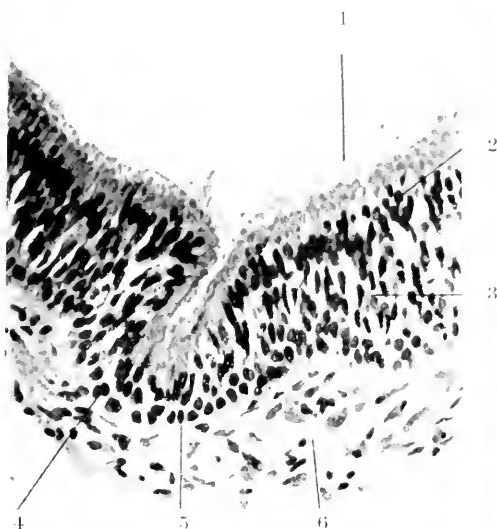


FIG. 2. Normal mucous membrane from maxillary antrum.  $\times$  about 400 diam. 1. Normal mucous secretion. 2. Superficial layer of columnar ciliated cells. 3. Intermediate layer of spindle-formed cells. 4. Deep layer of cubical cells. 5. Basement membrane. 6. Connective tissue.

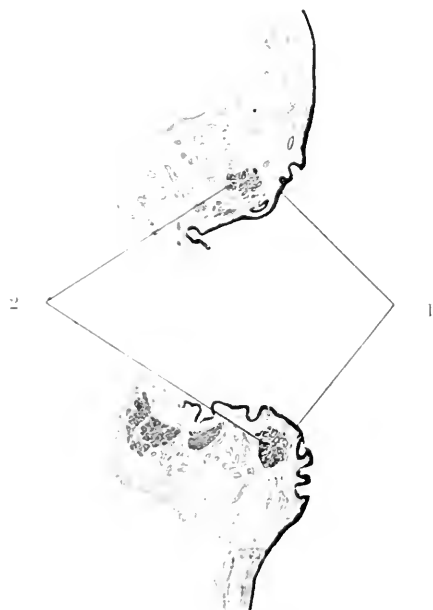


FIG. 3.—Normal ostium of sphenoidal sinus.  $\times$  about 17 diam. 1. Epithelial lining of sinus. 2. Mucous glands in connective tissue.

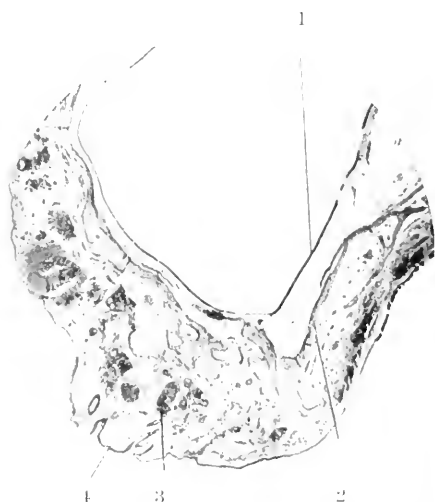


FIG. 4.—Normal middle turbinal, showing air-cell lined by healthy mucous membrane.  $\times$  6 diam. 1. Lining membrane of cell in middle turbinal. 2. Bony core of turbinal. 3. Glands in submucous tissue on nasal aspect. 4. Mucous membrane of nose.

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placed nucleus; a varying amount of granules is also present in these cells. In some the amount is so large that the nucleus is hidden, in others the granules are scanty, and in others again they are absent and the cells appear as "ghosts." Hajek has shown that in the nasal mucous membrane this latter condition is associated with a discharge of mucus, and it is almost certain that the same thing holds good in the accessory sinuses. Between these superficial ciliated cells and the basement membrane there are one or two rows of cubical or spindle-shaped cells, the nuclei of which are large in proportion to the size of the cell. In normal cases the basement membrane is a very delicate structure and is represented by a very fine homogeneous line just beneath the deepest layer of the epithelium. Goetjes states that under normal conditions a basement membrane is not present. The submucous tissue consists of several layers of elongated connective-tissue cells with their long axes parallel to the surface of the mucous membrane. Eschweiler has divided this layer into two—a looser superficial and a denser deep layer, the latter forming the periosteum of the subjacent bony wall. It is in this latter that the blood-vessels run, while in the superficial stratum are occasionally found the coiled mucous glands which form such a prominent feature of the submucous tissue of the inferior and middle turbinal bodies. It is usual to find an aggregation of these glands in the neighbourhood of the ostium (Fig. 3). It should perhaps be pointed out that there is not the same necessity for a large number of mucous glands in the accessory sinuses as there is in the nose itself; the interchange is very slight between the air contained in the sinuses and that passing to and fro in the nasal cavities; the drainage of the sinuses would also be extremely difficult if a large quantity of mucous secretion were poured out in these cavities. Goetjes states that a certain amount of round-cell infiltration is to be found in the normal submucous tissue of the sphenoidal sinus just as in the nasal mucous membrane. I have not been able to confirm this observation.

#### CHANGES IN THE MUCOUS MEMBRANE IN ACUTE AND CHRONIC INFLAMMATION.

Nineteen cases have been examined, distributed as follows: antral mucosa 9, ethmoidal 8, frontal 1, and sphenoidal 1; for two of the antral cases I am indebted to Dr. Logan Turner.

ACUTE INFLAMMATION.—Only one case of acute inflammation in the mucous membrane of a sinus was met with (Fig. 7), this was

in the sphenoidal sinus mentioned above, which was obtained at the autopsy on a case of acute pneumonia. The mucous membrane was considerably thickened and deep red in colour; the surface was velvety, and the sinus contained some thick muco-pus, but no blood. On microscopical section the prominent feature was the extensive hæmorrhage in the submucous tissue and the engorgement of the vessels; small-cell infiltration was not so marked as in chronic cases, and the œdema was slight in amount; the superficial epithelium was in places markedly disintegrated. Goetjes states that in acute inflammatory conditions the number of beaker cells, and consequently the production of mucus, is greatly increased; finally, the superficial layer of cells desquamates or the whole of the epithelial covering may be lost. In four cases of acute inflammation of the mucous membrane of the sphenoidal sinus Goetjes found marked round-cell infiltration, most intense just under the epithelium, but also present in the deeper layers around the glands and vessels. Submucous hæmorrhages were present in three out of four cases. The round cells consisted mainly of lymphocytes, but eosinophiles, polynuclear and plasma cells and isolated phagocytes were also present.

**CHRONIC INFLAMMATION.**—In the first place a more or less thick layer of catarrhal or purulent secretion is present on the surface (Figs. 14 and 15); it is important not to remove this layer during the process of preparing the specimen for examination, because, if it is present, we can exclude with certainty the fallacy of an artefact when talking about the condition of the superficial layer of cells. The secretion or exudation consists of mucus and leucocytes in various proportions, with occasional epithelial cells.

*Changes in the Superficial Layer.*—It is remarkable how often this layer appears to be normal, although there are marked changes in the submucous tissue. Not infrequently, however, the number of ghost-cells in the most superficial layer is very large, while in other cases this ciliated layer is absent in parts, and only the spindle-shaped or cubical cells beneath are left. Occasionally the basement membrane is entirely denuded of epithelial covering (Fig. 10). In most of the specimens leucocytes may be seen making their way between the epithelial cells to the surface, there to mix with the mucous secretion and form the *muco-purulent* or purulent exudation characteristic of sinus catarrh or suppuration (Fig. 9). In one and the same specimen mononuclear cells may be seen at one point between the epithelial cells, and at another only polymorphonuclear cells; eosinophiles may also occasionally



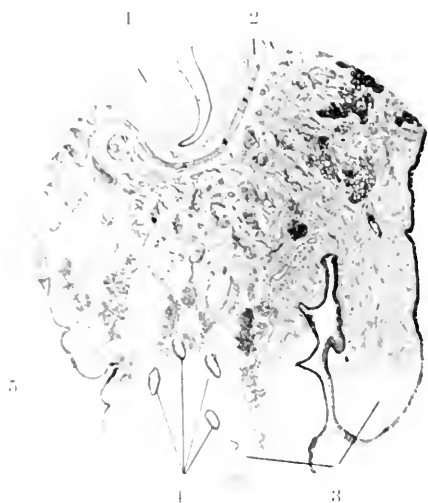


FIG. 5.—Early inflammatory edema of middle turbinal (nasal polypus).  $\times$  about 6 diam. 1. (Edema of submucous tissue of air-cell in middle turbinal. 2. Bone. 3. Pendulous masses of edematous connective tissue (polypi). 4. Dilated gland ducts. 5. Mucous glands.



FIG. 6.—Edema of middle turbinal in case of ethmoidal suppuration. The normal tissue are crowded towards the bone; the thickened lining membrane of the cell in the middle turbinal is well seen, and the small-cell infiltration of its mucous membrane.  $\times$  6 diam.

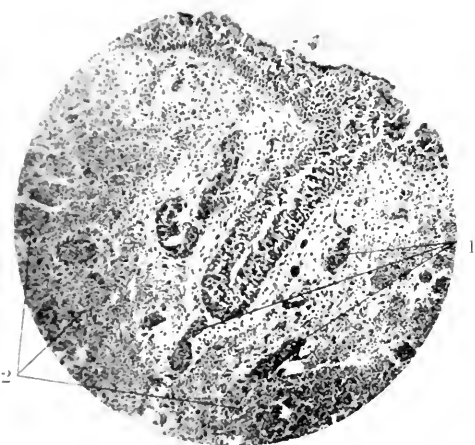


FIG. 7.—Mucous membrane from sphenoidal sinus showing acute inflammatory changes.  $\times$  50 diam. 1. Engorged blood-vessels. 2. Hemorrhages. Notice disintegrated condition of surface epithelium.



FIG. 8.—Polypoid mucous membrane from floor maxillary antrum.  $\times$  9 diam. 1. Apparent normal epithelium on surface. 2. Stalk of polypus. 3. Large connective tissue spaces filled with serum.



be found in the same situation. To a smaller extent this process may be observed in the nasal mucosa in cases of chronic catarrh, but in this condition the leucocytes which have come through the epithelium on to the surface are diluted by the large quantity of mucous secretion poured out by the vast number of mucous glands in the nose, and consequently the discharge is only *mucopurulent*, whereas in the accessory sinuses the mucous secretion is scanty and the leucocytes at least equally numerous, so that the discharge is more definitely *purulent*. With regard to metaplasia of the epithelium, after going very carefully over all my specimens I found small areas in three of the nine antral cases (33 per cent.) in which the superficial cells approximated more closely to the squamous than to the cylindrical type (Fig. 9). Oppikofer found this condition present in 41 per cent. of antral cases. The question of the relationship of cholesteatoma of the accessory sinuses and middle ear to this metaplasia of the epithelium is not yet settled; so far a case of cholesteatoma has not been recorded in which there was no possibility of the epithelium coming in from a surface covered by squamous epithelium (mouth, skin, external auditory meatus), but cases have been described in which this metaplasia of the epithelium was regarded as the cause of the cholesteatoma formation. In none of my specimens did the loss of superficial tissue extend deeper than the basement membrane, so that nothing in the nature of ulceration was met with in the accessory sinuses. Goetjes states that it is not possible to distinguish acute from chronic inflammatory processes by the epithelial changes.

The *basement membrane*, which is extremely delicate and may apparently be absent in the normal accessory sinuses, is, as a rule, markedly thickened in cases of chronic suppuration.

*Changes in the Submucous Tissue.*—The thickness of the mucous membrane varies considerably in different parts, being greatest in the hollows and least over the convex surfaces; this variation depends on the amount of submucous tissue. In chronic inflammatory conditions this tissue is usually much increased in depth, the increase being mainly due to oedematous infiltration, though fibrous changes, vascular engorgement and small-cell infiltration no doubt play a part. Goetjes looks on sclerosis of the submucous tissue as an indication that cure had resulted in a case of chronic inflammation (Fig. 16). I agree with Oppikofer in thinking that the degree of thickening of the submucous tissue is not a measure of the severity of the suppurative process, and that a slightly thickened mucous membrane may suppurate freely and cause the

same symptoms as a sinus with enormously thickened polypoid mucosa. In fact I think that many cases of this latter type are not clinically or pathologically severe, and are more allied to conditions of simple nasal catarrh and polypus formation (compare Fig. 8 with Fig. 11).

The œdematous infiltration results in a widening of the delicate connective-tissue network, so that large spaces are formed which are filled with serum; the process is in fact exactly similar to that found in the middle turbinal in cases of nasal polypus formation and in the inferior turbinal in so-called "chronic hypertrophic rhinitis." This polypoid character shows itself especially in the dependent parts of the sinuses, *e. g.* along the floor of the maxillary antrum; the condition is not difficult to explain, for we have only to remember that the mucous membrane accurately fitted the antrum when the submucous tissue was of normal thickness; if, now, this tissue increases tenfold in depth it follows that if the epithelium on the surface is to remain of the same superficial area it must become folded on itself, or, in other words, polypoid. As seen in section this tendency is naturally most marked in the dependent parts of the sinus (Fig. 8).

*Small-Cell Infiltration.*—This varies markedly in situation, in degree, and in the character of the cells; in some cases there is marked œdema and marked small-cell infiltration. Again, the infiltration may be confined to that part of the submucous layer which lies just under the basement membrane (Fig. 6), or it may be more or less evenly distributed over the whole thickness of this tissue, or it may be in places aggregated into lymph-nodes. I have not observed it especially marked in the deepest layer of the submucosa, but such appearances have been reported by Oppikofer. In some cases the submucosa resembles embryonic connective tissue (Fig. 14). The great majority of the cells are lymphocytes; this is interesting, because cytological examination of the fluid washed out of the maxillary antrum and nose by puncture through the outer wall of the inferior meatus frequently shows the cellular elements to consist almost entirely of polymorphs. I do not pretend to be able to explain this discrepancy, but I think that it is important in these cases to use a stout hollow needle which can be fitted on to the barrel of an evacuating syringe, so that any discharge present in the antrum may be withdrawn into the syringe and examined without the risk of contamination by the muco-pus and micro-organisms present in the nose.

*Glands.*—The gland-ducts in the submucous tissue may be

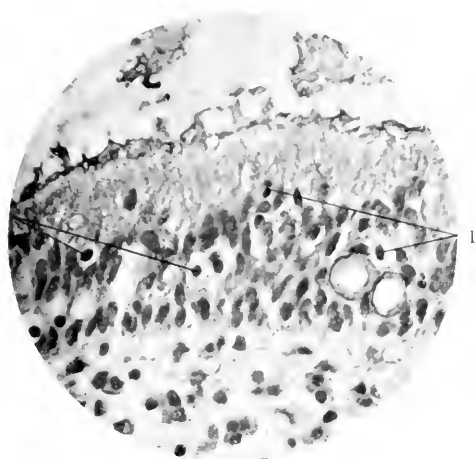


FIG. 9. Superficial epithelium from case of chronic maxillary antral suppuration.  $\times 1000$  diam. 1. Leucocytes making their way to the surface through the epithelial layer. Notice the catarrhal exudation on surface.

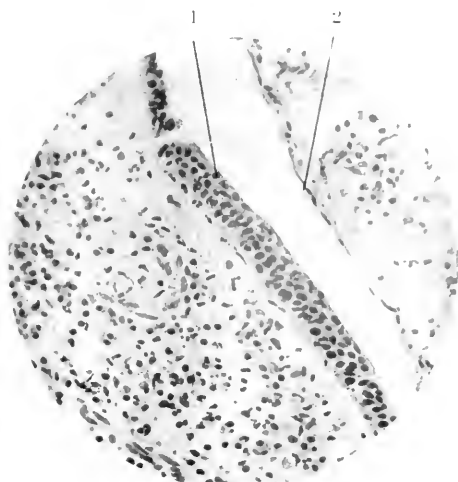


FIG. 10. Mucous membrane from maxillary antrum from a case of chronic suppurative catarrh.  $\times 300$  diam. 1. Metaplasia of superficial epithelium—approach to squamous type. 2. Complete loss of epithelium—the basement membrane, however, remains.

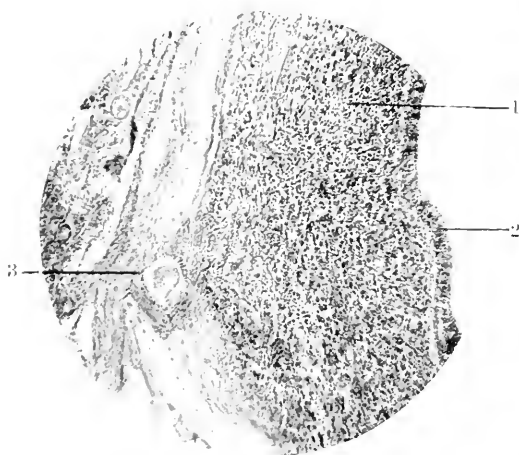


FIG. 11.—On the right is seen the infiltrated lining membrane of the air-cell in the middle turbinal. From a case of chronic ethmoidal suppuration.  $\times 50$  diam. 1. Small-cell infiltration is very dense, but oedema is slight. 2. Columnar epithelium. 3. Small vein showing fibrous thickening of wall.

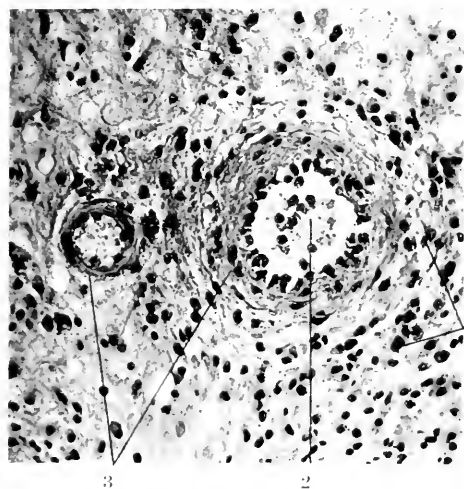


FIG. 12.—Chronic suppurative catarrh of the maxillary antrum.  $\times 300$  diam. 1. Small-cell infiltration of connective tissue. 2. Catarrhal secretion in gland duct. 3. Condensation of fibrous tissue around duct.

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dilated and filled with mucus, degenerated cells, and leucocytes; in one case I observed marked fibrous thickening round the ducts (Fig. 12). Cysts are occasionally found in the submucous tissue (Fig. 13); these are filled with homogeneous "colloid" material and lined by cubical cells; they are of course due to blockage of the gland-ducts, and are said to be more frequent in the antrum than in the frontal sinus; they are not diagnostic of chronic suppuration, according to Oppikofer. Goetjes frequently observed cysts in the sphenoidal sinus mucosa.

*Changes in the Vessels.*—The great engorgement characteristic of acute inflammation is not present in chronic cases to the same extent, but still a certain amount of vascular dilatation is to be observed. Thickening of the vessel walls was observed in one of my cases, and Oppikofer has described hyaline changes in the walls in otherwise healthy (presumably non-syphilitic) people. I have observed one such case. The small-cell infiltration is usually very marked round the vessels. Old hemorrhages are not infrequently seen in the submucous tissue, and deposits of pigment are also found (Fig. 15).

*Changes in the Bone.*—In the cases of antral, sphenoidal, and frontal suppuration the bony wall of the sinus was not included in the tissue examined, but out of the eight ethmoidal cases osteoclasts were found in only one instance. Bone disease may be present in accessory sinus suppuration, but it is not an essential change, and is due to the more or less gradual spread of the inflammatory process from the surface through the mucous membrane. Grünwald found bone disease in 18 per cent. of antral cases and in 60 per cent. of ethmoidal cases, and Oppikofer states that the bone often appears to be eroded with numerous lacunæ-like depressions, that lamellar formation is irregular, and bone-cells are enlarged. He states that osteoclasts are very rare; I have observed them in one case of ethmoidal suppuration.

*Micro-organisms.*—I have not been able to find organisms in the tissues in a single case, although numerous sections of all the cases were examined after staining by Gram's method in addition to the ordinary stains. In the discharge lying on the surface organisms could occasionally be seen. Dr. Turner reports that Mr. Wade found organisms present in each of four antral cases, and in three of these the bacteria were present in the cells of the mucous membrane, while in one case there were small abscess cavities crowded with cocci in the submucous tissue. Lack expresses the view that there is no definite evidence at present to

show that a particular organism or mixture of organisms is associated with a definite sort or degree of inflammation.

What is wanted, if we are ever to obtain useful knowledge as to the prognosis and method of treatment in a given case of sinus suppuration, is an extensive investigation into the subject. If we could, from a large series of cases, obtain a table giving the cause, duration, symptoms, rhinoscopic appearances, cytological and bacteriological examination of the discharge, along with an account of the histology of the mucous membrane if the case came to radical operation, we might be able to make a considerable advance.

*Comparison of the Simple Inflammatory Processes in the Upper Respiratory Tract, including the Middle-Ear Cleft.*—In a paper published in the JOURN. OF LARYNGOL., RHINOL., AND OTOL. (August, 1908) I showed that in nasal polypus formation and in inferior turbinal hypertrophy the condition was essentially one of chronic inflammatory œdema or serous exudation into the connective-tissue spaces under the basement membrane; the amount of leucocytic infiltration is slight, while the superficial epithelium is, as a rule, practically normal. On the other hand, from the microscopical examination of the nasal mucosa in cases of ozæna it is apparent that the change in the superficial epithelium is very marked—large tracts are converted into squamous epithelium and keratinisation of the superficial cells is sometimes present; the glands are atrophied and there is intense leucocytic infiltration of the submucous tissue; œdema, on the other hand, is absent. We find, however, not infrequently that the inferior turbinal shows typical atrophic changes, while the middle turbinal shows a polypoid condition.

In the accessory sinuses similar changes may be met with; thus two of my cases show œdema of the submucous tissue with intact epithelium and little or no leucocytic infiltration (Figs. 5 and 8). Kahn also remarks on the similarity of one of his cases to nasal polypus formation. On the other hand many sinus cases that come to the radical operation show changes which closely correspond to such conditions as suppurative rhinitis or ozæna. In these cases we have dense leucocytic infiltration with marked changes in the superficial epithelium (loss of ciliated layer, etc.). It is of course obvious that the accessory cavities are not, like the nose, subject to the drying influence of the air-currents and are not so liable to mixed infection; consequently we do not meet with the foul-smelling dry crusts in the accessory sinuses.



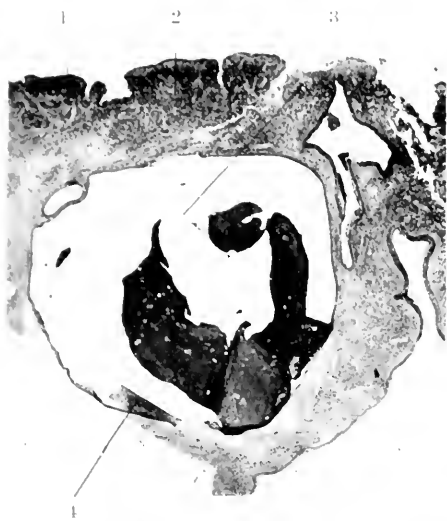


FIG. 13.—Mucosa of maxillary antrum from case of chronic suppurative catarrh.  $\times$  about 20 diam. 1. Superficial epithelium. 2. Dense small-cell infiltration of submucosa. 3. Cystic space (lined by cuboidal cells). 4. Colloid secretion in the cyst.

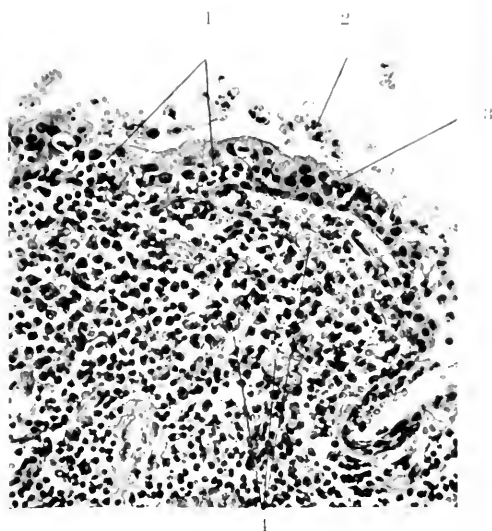


FIG. 14.—Mucous membrane of antrum from case of chronic suppuration.  $\times$  about 300 diam. 1. Leucocytes passing through epithelial layer to the surface. 2. Purulent secretion. 3. Epithelium showing loss of ciliated layer. 4. Engorged blood-vessels.



FIG. 15.—Mucous membrane of maxillary antrum from case of chronic suppurative catarrh.  $\times$  60 diam. 1. Catarrhal secretion on surface. 2. Superficial epithelium. 3. Hemorrhages in submucous tissue.

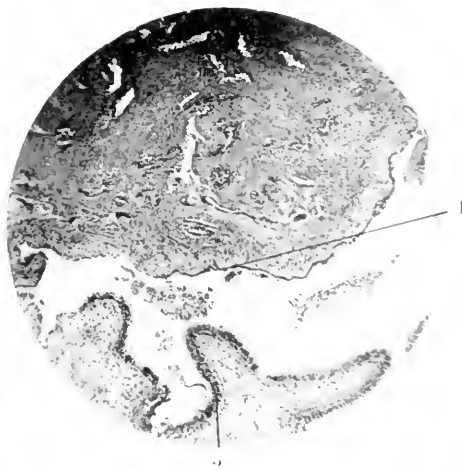


FIG. 16.—Mucous membrane of frontal sinus from case of rhinitis caseosa.  $\times$  50 diam. Shows fibrous change in submucous tissue. 1. Loss of superficial layers of epithelium. 2. Almost normal epithelium.

TO ILLUSTRATE MR. J. S. FRASER'S PAPER ON THE HISTOLOGY OF NASAL ACCESSORY SINUS SUPPURATION.



Catarrh of the mucous membrane of the accessory sinuses is much more common than is usually supposed. Oppikofer found that about half of his ninety-four *post-mortem* cases of sinus inflammation might be classified as *catarrh* and half as *suppuration*. All specialists are well acquainted with the type of patient who comes complaining of nasal discharge and obstruction, with perhaps a heavy feeling over the bridge of the nose or glabellar region. On examination the turbinals are found to be enlarged—the middle turbinal polypoid—and there is excess of muco-pus in the nose. The antra fail to illuminate, though the frontal sinuses as a rule light up well. On proof puncture of the antra only a little mucus or flaky muco-pus is washed out. The number of cases which fail to illuminate is too large to be accounted for by anatomical causes, such as thick bony wall. I do not, however, mean that accessory sinus catarrh is present in all cases of nasal catarrh, or that nasal suppuration is to be found in all cases of sinus suppuration. The position of the ostia of the accessory sinuses, while it renders infection of the mucosa of the sinus difficult, also tends to prevent the spontaneous cure of a severe sinus infection. The nasal mucosa on the other hand is frequently affected by catarrhal processes, but the drainage conditions in the nose are much more efficient than those in the accessory sinuses. In short, the nasal mucosa, though frequently infected, has a great chance of recovery, while the accessory sinuses, though not so exposed to simple or suppurative catarrhal processes, are less able to throw off these conditions once they have occurred.

Finally, although the number of my specimens of acute and chronic middle-ear inflammation is small—four acute and nine chronic cases—I think that it is possible to show that the changes here are similar to those in the nose and in the accessory sinuses; in other words, we have acute catarrh, chronic catarrh with cedematous swelling, acute and chronic suppurative processes. The difference between catarrhal and suppurative processes is only one of degree, and there are borderland cases. Otologists are all familiar with the type of acute otitis media which occurs in children with adenoids, where the tympanic membrane is slightly congested, cloudy, and bulging; such cases may go on to suppuration or they may not, and, even if perforation does occur, there is only for a day or two the escape of a thick *muco-purulent* discharge in which the mucous element predominates. Such cases are on the borderland of what is called “catarrh” and what is called “suppuration,” and from this mild type we have all grades of

severity up to those malignant cases in which within a few days the tympanic membrane is almost entirely lost and bone disease occurs in the ossicles and in the walls of the middle-ear cleft, more especially in the mastoid cells, where the drainage is least efficient. Nager has confirmed the observations of Burckhardt-Merian and others that there is a parallel—if not indeed an ætiological connection—between the severe nasal and pharyngeal affection of scarlet fever and the different forms of middle-ear suppuration. Nager has very seldom observed a severe scarlatinal diphtheria of the nose and pharynx without participation of the middle ear. Again, we know the type of case in which after signs of acute inflammation have been observed in the tympanic cavity the membrana tympani and hearing power return to normal, but the mastoid inflammation continues and an abscess forms. Nenmann and Ruttin have shown that the *Diplococcus mucosus capsulatus* is the organism present in many of these cases. Such cases appear to correspond to those of maxillary antral suppuration in which the nasal cavities present normal appearances. Finally, I venture to suggest that in the classification of acute and chronic simple inflammatory processes in the upper respiratory tract (including the middle-ear cleft) it would be well to consider the changes not only in the submucous tissue, as Eschweiler has proposed, but also in the epithelial covering. Under the heading of *Simple Catarrh* we might include cases with œdema of the submucosa, with slight alteration of the superficial epithelium, and only moderate leucocytic infiltration of the submucous tissue. Under the heading of *Suppurative Catarrh* we might include four more or less distinct conditions: (1) Cases with little or no œdema and only slight epithelial changes, but with marked leucocytic infiltration (Fig. 11). (2) Cases similar to the above, except that the epithelium has undergone metamorphosis, or is almost entirely absent over large areas. (3) Cases with marked œdema and leucocytic infiltration, but with slight epithelial changes. (4) Cases with marked œdema and leucocytic infiltration, but with extensive changes in the epithelial layer.

In conclusion, I should like to express my thanks to the Royal College of Physicians (Edinburgh) for kindly allowing me to work in the Laboratory, to Dr. James Ritchie for his advice and help in the preparation of this paper, and to the Carnegie Trust for enabling me to reproduce photomicrographs of my preparations.

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## STATISTICAL TABLES.

*Being Part III of the Report for the year 1908 from the Ear and Throat Department of the Royal Infirmary, Edinburgh, under the charge of Dr. Logan Turner.*

By W. B. HENDRY, L.R.C.P., L.R.C.S.E.,  
 Senior Clinical Assistant.

## AFFECTIONS OF THE NOSE (1679).

I. *The External Nose.*

Fracture of nasal bones . . . . .	4
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Choanal polypi . . . . .	3
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„ „ (fætid) . . . . .	37
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Frontal, ethmoidal and antral suppuration . . . . .	1
Frontal and ethmoidal suppuration . . . . .	1
Frontal, ethmoidal and sphenoidal suppuration . . . . .	1
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Malignant disease of helix . . . . .	2
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	{ Bilateral . . . . .	15
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Enteric . . . . .	1
Epilepsy . . . . .	1
Tabes . . . . .	1
Plumbism . . . . .	1
Anæmia . . . . .	1
Congenital syphilis . . . . .	15
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Labyrinthine suppuration . . . . .	3
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Hysteria . . . . .	1
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Occupation . . . . .	7
Unknown causes . . . . .	19

MISCELLANEOUS CASES 155.

(These include patients sent from other departments of the hospital for report in which the examination proved to be negative, such as cases of enlarged cervical glands, mumps, carious teeth, pulmonary phthisis, skin affections, headache of obscure origin, mental defects, bulbar paralysis, etc.)

TABLE OF OPERATIONS.

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Removal of dermoid cyst . . . . .	1
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Operations for lupus . . . . .	4
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	Nasal drainage . . . . .	36
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Naso-pharyngeal fibroma . . . . .	2

*The Larynx and Trachea.*

Tracheotomy . . . . .	5
Thyrotomy . . . . .	4
Simple tumours by intra-laryngeal methods . . . . .	2

*The Ear.*

Malignant tumour of auricle . . . . .	2
Exostosis of external meatus . . . . .	1
Ossiculectomy . . . . .	2
Acute mastoid abscess (Schwartz) . . . . .	21
Modified radical mastoid operation (preservation of tympanic membrane and ossicles) . . . . .	4
Radical mastoid operation . . . . .	39
Operation on the labyrinth . . . . .	4
Operation for intra-cranial complications . . . . .	16
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In addition to the above a large number of small operations were carried out in the Out-patient Department under local anaesthesia, such as removal of nasal polypi, hypertrophied turbinals, aural polypi and granulations, foreign bodies from the nose and ear, opening of peri-tonsillar abscess, tonsils, paracentesis of tympanic membrane, exploratory puncture of maxillary sinus and opening of ethmoidal cells.

General anaesthesia was administered on 1039 occasions, thus: Chloroform in 183 cases, ether in 50, and chloride of ethyl in 806. No death occurred under an anaesthetic.

**SOCIETIES' PROCEEDINGS.****BRITISH MEDICAL ASSOCIATION.**

*Annual Meeting, held at Belfast, on Wednesday, July 28, 1909.*

**SECTION OF OTO-LARYNGOLOGY.**

*DR. STCLAIR THOMSON, President, in the Chair.*

*Abstract Report by DR. DAN MCKENZIE.*

The PRESIDENT, thanking the members for the honour which had been conferred upon him in having been appointed to the chair, said he supposed that he owed his position to the fact that he had been born in Ulster.

Referring to the programme of discussions before the Section, he had been told that the subjects chosen were uninteresting. But

this criticism he regarded as an indication that the subjects had been chosen judiciously, seeing that on an occasion like the present, recondite matters, no matter how interesting to specialists, should not be selected for debate. There were doubtless many Hinterlands in their speciality which were being opened up by special workers, but discussion upon them would not take place at this meeting until they had been thoroughly explored. In tinnitus, the subject of the first day's discussion, they had to deal with a question of treatment. In that of the following day, the vagaries of the Klebs-Loeffler bacillus would be dealt with by Dr. Watson Williams, who had devoted much time and attention to the subject, and with him would be associated Dr. Buchanan, a public health specialist. Finally, in the treatment of laryngeal stenosis they would have the advantage of listening to a British surgeon who had had wide experience in this particular trouble, while Dr. Delsaux, of Brussels, would present to them the fruits of the extensive experience of operative methods for its relief. Recurring to tinnitus, the subject now before them, he asked whether the word should be pronounced with the accent on the initial or the penultimate syllable.

#### DISCUSSION ON TINNITUS AURIUM.

Dr. BARR (Glasgow), introducing the discussion, said that this was the third occasion on which he had had the honour of reading the introductory paper of a discussion on tinnitus. The first was at Cork in 1871, and the second at Dublin in 1879. The subject of the treatment of tinnitus, he went on to say, was one of great extent, since it involved a description of almost every disease of the ear. The symptom originated in an irritation of the terminal apparatus, and the first point to be settled was, what was the source of the irritation? Hence a thorough subjective and objective examination of each case was necessary before treatment could be undertaken. In many diseases, such as impacted cerumen and acute inflammations of the ear, the treatment of tinnitus was very satisfactory, but he did not look upon tinnitus arising from such causes as coming within the scope of this debate. The most difficult cases were those where the tinnitus arose from chronic middle-ear catarrh, labyrinthine disease, or some nerve disorder. An effective remedy, medical or surgical, which would relieve all cases, was still to seek. The large number of remedies proposed from time to time was in inverse proportion to their value, and the success ascribed to many of them doubtless arose from a confusion of the *post* with

the *propter*. Too little attention was paid to the general constitutional state of such patients. In many of them the symptom was associated with some digestive or hepatic disturbance, temporary or permanent, and in these cases considerable benefit followed the exhibition of a dose of blue pill followed by a saline purgative. In neurasthenic states, again, prolonged rest with change of air or occupation where it could be obtained should be advised, and tonic treatment with strychnine, arsenic, and the glycerophosphates was of value. Worry and all kinds of strong emotion should be avoided. In otosclerosis he preferred general to local treatment. Syphilitic disease of the labyrinth or within the cranial cavity demanded the remedies proper to that dyscrasia, and Bright's disease, glycosuria, or diabetes required the co-operation of the physician in order to bring about a relief from the aural complication. Fibrolysin had recently been recommended in cicatricial and adhesive complaints of the middle ear, and, if successful, it would supply a felt want. His son, Dr. Stoddart Barr, had tried the remedy hypodermically, so far without much success, but a large number of trials was necessary before a definite decision could be come to on its value. Phosphorus for otosclerosis had been recommended by Siebenmann, but it had not yet been employed to any great extent in this country. He was able, however, to corroborate the statement that the drug could be administered for a prolonged period without setting up any toxic effects, but also, he had found, without benefiting the disease. Quinine in large doses induced tinnitus, as was well known; it had, however, been given for the relief of the symptom, but with questionable success even when combined with hydrobromic acid. In rheumatic cases, sodium salicylate or aspirin was sometimes tried, but he was dubious of the wisdom of such experiments. With regard to sedatives, the recourse to which was imperative in the graver forms of the disorder, the bromides were certainly of use, given in large doses at bedtime. For this purpose he preferred the bromides to hydrobromic acid, but if such remedies had to be given for a prolonged period the acid was better. It was at times necessary to continue the use of hypnotics for years. In labyrinthitis large doses of potassium iodide were called for even when there was no sign of syphilis. He had at times found vasogen useful applied behind the ear. Pilocarpin was certainly of value at times, especially in labyrinth cases, when its resorbent effect exercised a beneficent action upon the lesion. With regard to climatic treatment, humid

sea-air was certainly harmful, while a dry, bracing mountain air was beneficial. Counter-irritation over the mastoid by means of mustard or cantharides seemed to be useful at times, and friction with camphor had been favourably spoken of, but it was difficult to say how much of this was due to the mental influence. Generally speaking, the sufferer should be encouraged to divert his mind from the noise, and to hope for a mitigation in the tinnitus as time went on. He should be informed that the symptom was not due to disease of the brain. The speaker then turned to the consideration of pneumatic massage, and said that after one or two minutes' application a temporary relief of the symptom was often observed. On the other hand, the noise of the electro-motor was injurious at times. A method of treatment known as *Ton-Behandlung*, had recently been advocated. This consisted in the application of a tuning-fork to the ear, the note of which was as far as possible from that of the subjective sound. The speaker had observed some relief follow its use for a few minutes or hours, but had never obtained a permanent improvement. The high-frequency and other electrical methods of treatment, so highly praised some years ago, seemed to have passed into oblivion. Good nasal breathing should be secured in all cases, and adenoids and similar obstacles in the air-way removed; but tinnitus was sometimes aggravated by injudicious operation on the nose.

MR. RICHARD LAKE (London), continuing the introduction of the subject, said that in cases of tinnitus without deafness, and without signs of central nerve disease, the nose was frequently responsible for the symptom. Eustachian obstruction should be relieved by operation when it was called for. He had not been strongly tempted to use lumbar puncture for the relief of tinnitus, although Babinski, in 1904, was able to report that thirty out of ninety cases had been relieved. Apparently, however, most of these were cases of nerve-disease. The loss of cerebro-spinal fluid did not seem to relieve central tinnitus. The lymph-spaces of the labyrinth were not in direct connection with the subarachnoid, and thus, when relief was obtained, it could with as much reason be attributed to a reduction of blood-pressure, for a similar result was often got from the use of cardiac depressants.

Adverting to operations upon the ear, the speaker remarked that the simple division of the tensor tympani and the posterior fold of the membrana tympani were very useful at times, and the same could be said of removal of the malleus and incus with or without the membrane. We were not yet justified in regarding

these operations as obsolete. The idea underlying them was that of removing abnormal pressure in the labyrinth. He asked whether stapelial pressure could be regarded as a cause of tinnitus. It should be noted that in Gellé's test tinnitus was not produced although vertigo was. If the stapes was mobile these intra-meatal operations might be serviceable. The removal of the stapes did not always produce the hoped-for result when that ossicle was ankylosed in the oval window. The foot-plate might remain. And in any case the operation opened up a channel for infection of intra-cranial structures. Another set of experimental operations, to wit, the opening of the labyrinth through the round or oval window, pre-supposed a tendency to the superabundance of labyrinthine fluid, and this we knew now not to be always the case. Trephining the cochlea did not necessarily destroy the hearing, but its effect upon tinnitus was unreliable. The only patient in whom Mr. Lake had tried this operation obtained no benefit. Another experimental method, that of tying the internal carotid in order to cut off the blood-supply from the labyrinth, was indefensible, for the free anastomosis provided by the circle of Willis continued the circulation. The story was different when we came to consider total ablation of the cochlea. The first case was operated on by him in 1904 and proved successful. In all, three successes had been obtained out of four cases. In the unsuccessful case the patient had threatened suicide before the operation, and afterwards carried out her threat. Three successes out of four was very hopeful he thought. At and after the operation the outward flow of cerebro-spinal fluid was usually very profuse, and thus the benefits likely to follow lumbar puncture were also obtained in this operation. Ablation of the cochlea was, in his opinion, preferable to division of the auditory nerve both in regard to the simplicity of operation and beneficial result. Many cases had been treated by auditory nerve-division without relief to the tinnitus, and one or two had died as the result of the operation; consequently the cochlear operation was in every respect better than division of the auditory nerve.

In considering the question of the operative treatment, it should not be forgotten that tinnitus might be central, and, if it were, no operation would be of any use.

MR. KNOWLES RENSCHAW (Liverpool) referred to the most frequent cause of tinnitus—adhesive catarrh, in which the symptom, though slight at the onset, might increase until it became quite unbearable. The cause of the noises in these cases was, it was generally said, increased intra-



labyrinthine pressure, set up by displacement inwards of the foot-plate of the stapes, or induced by some interference with the labyrinth lymph-tension. If either of these views was correct efforts to relieve the noises should be directed to relieving these conditions. Oto-massage did certainly improve slight and even severe cases, but the improvement was very evanescent, lasting sometimes but a few minutes. He had been making trial of thiosinamine and fibrolysin for some time past, more particularly the former, which he administered in doses of 10 to 35 m. of a 5 per cent. watery solution hypodermically twice a week. He had also used a 10 per cent. solution in water containing 20 per cent. of glycerine. The latter solution caused a slight burning sensation at the site of injection but no general discomfort. Regarding the effect of this treatment upon the hearing his results were not yet sufficiently perfect to enable him to publish them, but he found that the tinnitus had been undoubtedly improved in every case. He had used the treatment in twenty cases of middle-ear disease, of which about twelve were cases of residual suppuration. In all there had been improvement in the tinnitus. Thiosinamine or fibrolysin was contra-indicated in arterio-sclerosis, because it increased blood-pressure and caused a local reaction, which, in that condition, might give rise to harm.

DR. ANDREW WYLIE (London) was disappointed that Dr. Barr had not been able to offer any new suggestions in the way of treatment. The speaker had found, like Dr. Barr, calomel of service in some cases, especially when given in small doses of  $\frac{1}{16}$  or  $\frac{1}{32}$  gr. repeated every night or every other night. The value of the hot-air treatment, especially in dry catarrhal or sclerotic affections, had not been mentioned. He had had considerable success, for the time being at any rate, in alleviating the symptom by the use of this agent. The application could be made by means of the drying apparatus used by dentists, although it did not inflate the ear sufficiently. He exhibited a plan of an apparatus of his own devising, which consisted of a cylindrical vessel containing air which was warmed by an electric lamp regulated under the guidance of a thermometer. The air was blown through the cylinder by means of a foot-bellows and purified by passage through a glycerine bath. The Eustachian catheter tended to become uncomfortably hot, however, and this drawback he had not yet succeeded in overcoming. In spite of that he had been able to employ it in about forty cases during the last three months, and in every case with benefit.

DR. OLIVER (Carlisle) asked Mr. Knowles Renshaw what was supposed to be the pharmacological action of fibrolysin. He himself had occasionally found perchloride of mercury, in doses of  $\frac{1}{60}$  gr. continued over a long period of time, of much service in treating the symptom.

MR. WILLIAM HILL (London) thought that Mr. Lake had summed up the treatment of tinnitus fairly. He himself would have welcomed a stronger advocacy of the operative treatment had Mr. Lake been able to adopt that course. The difficulty in advising operation on the labyrinth for the relief of tinnitus lay in the fact that if the tinnitus happened to be central in origin the operation would prove futile. How could we tell in any particular case whether the tinnitus was central or peripheral? For this reason he himself had hitherto avoided the labyrinth operation. In regard to the other symptom of ear disease, vertigo, we were in a different position. He asked whether any other member had had experience of the hot-air treatment, because he had seen recently that Lermoyez had been advocating it.

MR. WARD COUSINS (Plymouth) held that no value could be attached

to the patient's description of the nature of the subjective sounds he experienced. Tinnitus was, in its inherent nature, a condition of extreme excitement of the auditory nerve. It might be caused by disease of the external, middle, or internal ear indifferently. In many acute cases it was, at times, exceedingly severe. In the case of middle-ear catarrh the symptom could be accounted for by the increased pressure and tension present. In past times spasm of the tensor tympani used to be cited as a cause of tinnitus, but the speaker observed that as its function was to open the Eustachian tube spasm of the muscle could not very well cause tinnitus. With reference to the treatment of the complaint, alternate pressure and exhaustion of the air in the middle ear was at times of value. He had known tinnitus to be set up by violent syringing. A large number of cases were due to general causes, but whatever the cause in the severest cases persistent treatment was necessary. There were a certain number of cases which we must admit to be incurable, and very distressing such cases might be. For tinnitus seemed to have a peculiar power of inducing severe nervous depression, sometimes even ending in suicide. It was to cases of this order that Mr. Lake's operative treatment brought hope. Referring to division of the auditory nerve, the speaker said that even although the operation induced absolute deafness, and perhaps also facial paralysis, yet if the tinnitus was cured he was sure that the patient would regard those secondary consequences as mere trifles.

Dr. ROBERT WOODS (Dublin) said that he could not accept as valid the assumption that the drawing in of the foot-plate of the stapes could give rise to a continued elevation of labyrinthine pressure. The presence of other small openings in the labyrinth wall and the connection of the labyrinth spaces with other lymph systems rendered the occurrence of such an event highly improbable. The idea had originated in Politzer's manometer experiment, which demonstrated the rise of pressure when the stapes was driven in, but this rise of pressure was of but momentary duration, and did not prove that permanent elevation of pressure could follow from this cause.

Dr. LOGAN TURNER (Edinburgh) asked if it could be believed that fibrolysin when introduced into the general circulation would exercise a selective action upon adhesions in the ear. Surely if used in such conditions it should be applied to the middle ear directly. He warned the Section to investigate the past history of cases where fibrolysin was to be used, for if that substance had the power of removing adhesions its use in people who had been suffering from gastric ulcer, for example, might prove to be harmful. He expressed agreement with Dr. Woods in his remarks upon the causation of tinnitus.

Dr. BRYSON DELAVAN (New York) welcomed a discussion upon the topic. In America and elsewhere too much was heard of the operative surgery of the ear and too little of subjects like tinnitus, and he hoped that the discussion would re-awaken interest in tinnitus. The operative treatment outlined by Mr. Lake was interesting, and Drs. Green, Sexton, and others in America had at one time manifested much activity in the matter. Recently, however, this seemed to have fallen off, perhaps because of the difficulty of technique.

The PRESIDENT, wishing to obtain the most recent information upon the use of hot air in nasal diseases, had lately written to Bourgeois, Lermoyez's assistant, on the matter. In reply he was informed that Lermoyez and his school did not value the treatment very highly, and had come to the conclusion that any benefits following its employment were probably the effect of suggestion.

Dr. BARR, in reply, asked Mr. Lake whether Mr. Ballance's case was unsuccessful, seeing that the latter had reported the result to be favourable. Continuing further his remarks upon the operative treatment of tinnitus, the speaker asked if any member had had experience of ligation of the posterior auricular artery in the pulsating forms, and related an illustrative case. This was a man who was troubled by pulsation in the ear, which he could check by the pressure of the finger over the mastoid. His hearing was good, save that the tinnitus interfered with it. The posterior auricular artery was tied but without benefit; then the external carotid artery was tied, after which the pulsation became less and finally disappeared. It was difficult to explain how the patient was able to stop the pulsation by pressure on the posterior auricular, and yet at the same time, when that vessel was ligated, no improvement in the symptom followed. Mr. Knowles Renshaw's results had interested him, and Dr. Logan Turner's warning should be remembered. It seemed that frequent and long-continued use of fibrolysin was necessary, and it was an expensive drug. He knew of no other remedy, however, of which such favourable accounts had been reported as they had heard to-day. He was disappointed not to have heard any remarks made about the *Ton-Behandlung*. It was a question how tuning-forks could produce a temporary disappearance of tinnitus. Dr. Barr then described a modified method of *Ton-Behandlung* which a quack had brought to his notice. With regard to the hot-air treatment, he expressed a hope that he would hear further details of Dr. Wylie's results. Finally, but little improvement in the treatment of tinnitus had come to light in the present discussion, and although operation would be tolerated as a radical measure in the most desperate cases, still, for the milder forms of the complaint, a less severe remedy was desirable.

Mr. LAKE, in reply, said that with reference to the operation of dividing the auditory nerve, the following were the figures: eight cases had been reported; three were fatal, two were failures, two successes, and in one the result was not imparted. Consequently he did not think the operation had a future. The operation on the labyrinth did not demand any very particular skill. The modiolus should always be removed, and this was easily done with a single tap of the chisel. He held the opinion that his operation of removing the end-organ was more likely to be successful than simple division of the nerve. He looked upon the ganglion spirale as the source of tinnitus in many cases, consequently the removal of the modiolus was essential, a procedure, which, as he had already said, was simple and easy. There was no danger to the facial nerve, as the field of operation lay well beneath it.

#### PRELIMINARY OBSERVATIONS ON THE ASSOCIATION OF SLIGHT ABNORMALITIES OF THE AURICLE WITH CERTAIN FORMS OF DEAFNESS.

By H. E. JONES (Liverpool).

The abnormalities of the auricle he had observed consisted in smallness or absence of the lobule, attachment of the lobule along its anterior border to the cheek, with or without defects in the helix or faulty position of the whole auricle. Analysis of cases showed that these defects were most commonly present in diseases not due to exanthemata, acute inflammations, and similar accidents.

The defects were sometimes associated with palatal and pharyngeal abnormalities.

He was inclined to associate those types of chronic deafness for which no definite cause has been found with the defects he had described. He was at present engaged in statistical work on the matter, an illustrative table of which he exhibited.

MR. GEORGE JACKSON asked Mr. Jones if he could give any reason why there should be a connection between these abnormalities and deafness.

MR. R. LAKE complimented the reader of the paper upon his energy in collecting statistics, and advised a continuation of the work, for it was only by means of large numbers that reliable conclusions could be arrived at.

DR. DAN MCKENZIE advised that in addition to the collection of numbers of cases care should be taken to secure a number of controls. He encouraged Mr. Jones to proceed with the investigation, for, although it would involve laborious statistical work, the result, whether positive or negative, would be of much interest.

#### THE ÆTIOLOGY OF AUDITORY MEATUS EXOSTOSES.

BY MR. GEORGE JACKSON (Plymouth).

Regarding the incidence of exostoses, it was certainly the case that they were found more frequently in maritime countries and seaside places than in districts remote from the sea. An examination of the skulls in the Hunterian Museum showed that all, or nearly all, the skulls with meatal exostoses came from Peru and the South Sea Islands. Most of the growths were cancellous in structure and occupied the meatus with their long axis parallel to that of the meatus. Hard ivory exostoses were infrequent. It did not appear that the multiple ivory type figured in the textbooks were at all common.

Their ætiology was undetermined, but their distribution suggested the irritant action of sea-water to be a factor in their production. A certain number probably arose from the chronic periostitis secondary to a fracture or to chronic purulent discharge. But in many this was not present.

MR. HUGH JONES described a case of bilateral exostoses in a medical man, the removal of which proved to be an undertaking of great difficulty, although the operation was performed through a post-auricular incision. In one ear the exostosis sprang from the posterior wall and extended up to the tympanum. On the inner side cholesteatoma was found. No tympanic membrane was seen, and as a result of the distorted relationship of the parts the facial nerve was injured and facial paralysis resulted. Whether this would prove to be permanent or not could not be decided at present.

MR. KNOWLES RENSRAW asked if any statistics of exostoses had been obtained from the Navy.

MR. GEORGE JACKSON, in reply, said that he had examined a large number of skulls in the Royal College of Surgeons, and the examination supported the belief that exostoses were associated with the irritation caused by sea-water. He had been informed that in inland countries like Nubia the growths were unknown. They were common, on the other hand, in skulls from the South Sea Islands, and in them the osteomata were long and the meatus was reduced to a mere slit. There were no other signs of disease in most of the skulls examined.

#### THE CLINICAL VALUE OF THE LABYRINTHINE NYSTAGMUS TESTS.

BY DR. DAN MCKENZIE (London).

The author described a new method of carrying out the caloric tests. This consisted in estimating the duration of the induction period necessary to produce nystagmus when water of a temperature of 20°-22° C. or of 42° C. was used. A series of forty-two cases of ear disease was detailed, and the following were some of the conclusions arrived at:

In oto-sclerosis the activity of the vestibular sense bore no relationship to the severity of the deafness.

In syphilis of the labyrinth the vestibular organ was in some cases not affected in association with the cochlear; in others the impairment was equal in both end-organs.

In hysterical deafness the vestibular sense was impaired in proportion to the severity of the deafness.

In neurasthenic deafness the vestibular system was hypersensitive.

In most cases of circumscribed labyrinthitis the vestibular sense was impaired, and the impairment was increased in several cases after cure of the suppuration by the radical mastoid operation.

A case of general purulent labyrinthitis was found with normal vestibular reactions, although there was well-marked spontaneous nystagmus to the opposite side; and the same was found in a case of circumscribed labyrinthitis.

The author uttered the caution that the vestibular reactions should not be exclusively relied upon in diagnosis, but that they should be taken along with the hearing-tests and other symptoms and signs.

MR. HAROLD BARWELL hoped that these investigations would be continued, as their importance was great.

DR. BARR (Glasgow) asked if there was no danger in injecting cold water into the meatus in cases of ear suppuration.

DR. DAN MCKENZIE, in reply to Dr. Barr, said that in his method

of douching the ear the flow of water was so gentle that penetration could hardly occur, and that, as the douche was stopped on the first appearance of nystagmus, severe vertigo and its attendant discomforts were seldom produced.

*(To be continued.)*

## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

*Fifteenth Annual Meeting.*

DR. CHRISTIAN HOLMES (*Cincinnati*) *President, in the Chair.*

### ORATION IN LARYNGOLOGY—"THE TREATMENT OF CANCER OF THE LARYNX."

BY PROFESSOR OTTOKAR CHIARI (of Vienna).

Prophylaxis would be of some value if the cause of carcinoma were known. It might be stated, however, with great reserve, that continued irritation of the mucosa of the larynx (by excessive drinking and smoking, for example), recurring catarrh, syphilis, and finally, heredity, were to be considered as probable causes of cancer of the larynx.

The various non-surgical methods of treatment were mentioned; serum therapy, Röntgen rays, radium, the enzyme treatment with trypsin and amylopsin, and fulguration. The ligation of the carotid according to Dawbarn's method was also mentioned.

Surgical methods alone have proved of value in the treatment of cancer of the larynx, and they alone show undoubted cures of long duration.

The early removal of intrinsic cancer of the larynx generally results in radical cure. Extrinsic cancers, on the other hand, which lie about the margins of the larynx affect the lymph-nodes much earlier, and give, therefore, a much graver prognosis. Total extirpation of extensive intrinsic cancer with participation of the œsophagus in horny squamous-celled cancer, except when no metastatic lymph-nodes are present and in the very old, is not indicated.

The operations for the radical removal of cancer of the larynx are: (1) intra-laryngeal extirpation; (2) thyrotomy; (3) partial

and total extirpation of the larynx : (1) subhyoid, transverse, and lateral pharyngotomy.

Intra-laryngeal extirpation, according to the majority of writers, was indicated only for small circumscribed tumours upon completely movable cords. From the available statistics concerning the method it was seen that the operation was entirely without danger. No instance of death resulted from the operation; 46 per cent. recovered, but in 33 per cent. there was recurrence.

Thyrotomy, according to the consensus of opinion of most operators, was indicated only when the cancer was small and circumscribed, when it involved the vocal or ventricular bands without prejudice to the mobility of the vocal cords. If the arytenoid was immovable it was an indication that the cancer had spread to the deeper portions. Even when the arytenoid was not swollen a partial extirpation must be performed. A comparison of the statistics of different operators showed that since 1888 cure had resulted in 50 per cent. of the cases; since 1894, in 52 per cent. Recurrences since 1888 had developed in 20 per cent. of the cases, and since 1894 in 19.1 per cent. All operators reported that the voice became good after the removal of one vocal band and also after removal of the ventricular bands.

The most suitable cases for partial extirpation were those in which the cancer was developed upon the vocal bands and visibly retarded their mobility, without the presence of lymph-node enlargement and without the pharynx being affected. Somewhat less suitable were the extrinsic cancers which had their origin on the arytenoid or the ary-epiglottic folds, and those cases in which one side of the larynx was wholly involved. Of the thirty-two partial laryngectomies performed by the author, one case remained cured for six years and was then lost sight of; another died six years and four months after operation from carcinoma of the neck; two of the relatively cured patients lived for two years and four months and two years and two months; two lived two years and eight months, then disappeared from observation; one died of pneumonia one year after operation; one died of diabetes one year after operation; and one died one year and two months after operation from a febrile disease. There was recurrence in fifteen cases.

Total extirpation of the larynx was indicated only when both sides of the larynx were affected. Many operators considered those cases only as operable where there were not many lymph-nodes affected, and these completely movable. Many believed that those cases of intrinsic cancer which grow through the thyroid cartilage and

extend outwardly gave hardly any hope of radical cure. The completed operation left, as a rule, a connection between the wound-opening and the trachea, so that the patient, even if he wore a cannula, could blow air through the window of the cannula into the pharyngeal and oral cavity. In order to give the patient vocal speech a tube might be introduced, in three or four weeks, from the cannula to the lower end of the pharynx and a reed may be placed in this tube. This instrument was known as the artificial larynx. It gave such discomfort, however, that the patient was generally content with the whispered voice. Glück's operation for total extirpation of the larynx was described in detail by the author. So far as mortality was concerned, the results since 1895 had been better than in partial laryngectomy and were next to thyrotomy. It surpassed all other methods as to recurrence, and as to cure it ranked next to partial laryngectomy and about half that of thyrotomy.

Subhyoid pharyngotomy, or subhyoid laryngectomy, was indicated for those cancers which involve only the entrance of the larynx. Such growths were generally located on the epiglottis alone, more uncommonly on the arytaenoid or ary-epiglottic fold.

By transhyoid pharyngotomy was understood the median splitting of the hyoid bone and membrana hyoidea, permitting the edges of the wound to be held apart by strong retractors. In this way the passage to the larynx was claimed to be good.

Median pharyngotomy was a combination of transhyoid pharyngotomy and thyrotomy.

Lateral pharyngotomy, performed according to various methods, was especially suitable for carcinoma of the pharynx and tongue, and less so for cancer of the larynx.

#### THE PHYSIOLOGY OF THE NOSE AND SINUSES, WITH SPECIAL REFERENCE TO THE FUNCTIONS AND IMPORTANCE OF THE TURBINATED BODIES.

By DR. HENRY J. HARTZ (Detroit, Mich.).

The author called attention to the fact that the human olfactory organ was in a state of retrogression, and that only the lower human races retained the acuteness of the sense of smell such as is present in the lower animals. The nose, connected with nearly all organs of the body by vaso-motor paths, might set in motion a variety of reflexes, being, at the same time, the recipient of as many from remote organs. It was most intimately associated with the lymphatic and the central nervous systems.



Inspiration normally, under negative air-pressure, as proved by Paulson and Rethi, took an upward curved direction into the middle and superior meatuses, it traversed the olfactory region, and descended toward the choanae. The expired air normally, under positive air-pressure, as proved by Mink, was completely saturated and of blood heat, and contained carbonic acid gas. It followed the path along the floor of the nose, there being no rarefied air to deflect it upward. The expiratory currents were thus opposed by the lower turbinated bodies.

Careful measurements by Mink had revealed the fact that both middle and lower turbinated bodies maintained a positive air-pressure of six millimetres of water in the naso-pharynx. When these bodies were reduced by cocaine the positive air-pressure fell from eight to two millimetres of water. Mink sought for a physiological function in the turbinated bodies, more especially the lower, namely, that of assisting in the maintenance of a positive air-pressure by the swelling of their spongy tissue, and further, that of aiding in the equalisation of the amount of expired air in a given unit of time, irrespective of the size of the breath. Under vaso-motor control the turbinated bodies, with their erectile tissue, together with the tubercle of the septum, aided in regulating the lumen of the nasal channels for respiration.

The investigations of Kayser and Shutter show that there was but little difference, as far as moisture and heat are concerned, between the air inspired through the nose and that inspired through the mouth. The air of the mouth had a temperature of  $32.2^{\circ}$  C., that of the nose  $33^{\circ}$  C., while both cavities show a humidity of  $\frac{7}{8}$ . Thus the usually accepted theory that the nose alone served to heat and moisten the inspired air was not borne out by experiment.

The ventilation of the sinuses was influenced by the inspiratory air-current of the nose, which, being negativised in pressure, causes siphonage through the orifices. At the end of each inspiration, however, the negative pressure of air in the sinuses was equalised by a sudden inrush of atmospheric air. The expiratory currents were under positive air-pressure, and thus the sinuses, like the entire air-tract, underwent fluctuations of air-pressure.

#### THE PATHOLOGY AND TREATMENT OF RECURRENT QUINSY.

By DR. ROBERT C. MYLES (New York City).

Most cases of recurrent quinsy were associated with chronic fistulous abscess cavities, with organised walls and lining

membranes situated behind the capsule of the tonsils. Theoretically the formation and maintenance of these persistent cavities could be partially accounted for by the mechanical action of the palato-glossus and the palato-pharyngeus muscles upon the triangular cellular space external to the tonsil, and inside the superior constrictor muscle. The author had noticed that the cavity discharged from one of the lacunæ through an opening quite a distance above its floor. This condition created a reservoir which was imperfectly emptied by the muscles, while the median and external walls of this *cul-de-sac* were frequently separated by the movements of the tongue and pharynx.

The most satisfactory operative procedure consisted in dissecting the tonsils from the pillars, leaving enough of the capsule around the outlet of the tonsil-cavity to prevent adhesion across the space between the pillars, then removing the tonsil as deeply as possible with the traction-forceps and snare. All the median wall of the cavity was now removed with the author's excisor forceps. The fistulous tracts that lead from the main cavity could be incised with curved bistoury as far as was safe.

Dr. JOHN F. BARNHILL (Indianapolis, Ind.) asked Dr. Myles if he would give something more of the pathology in the cases mentioned. Since the adoption of the radical tonsil operation it had often been found that the capsule of the tonsil was so firm and dense that it would seem impossible, unless it were diseased and broken through, for the abscess to form outside the tonsil. He would like to know whether Dr. Myles believed this to be the case.

Dr. WENDELL C. PHILLIPS (New York City) thought the condition described by Dr. Myles, if he understood the reader of the paper correctly, was fairly common. He had frequently observed cases in which chronic abscesses remained in and about the basal membrane of the tonsil, which continued to discharge for years, with occasional acute exacerbations in the form of peritonsillar abscesses. He recalled one case in which the pus accumulated every two or three days, wherein the patient himself learned to put his finger upon the base of the tonsil and squeeze out the mass of pus and broken-down tissue. Since beginning to do this the man had never had an attack of quinsy, though he had had one attack of an inflammatory process which involved the epiglottis and caused œdema, and seemed to be of bacterial origin.

THE PRESENT STATUS OF THE TONSIL OPERATION, ITS INDICATIONS,  
AND THE VARIOUS METHODS IN USE.

BY DR. GEORGE L. RICHARDS (Fall River, Mass.).

The author presented the results of a collective investigation, based upon replies to a series of questions addressed to prominent laryngologists in Europe and America, and upon the literature covering the subject. The questions considered the following points: (1) The physiological function of the tonsil; (2) the use of chemical caustics in its treatment; (3) its relation to tuberculosis and the cervical glands; (4) its relation to rheumatism; (5) indications for its removal; (6) the choice of operation; (7) the necessity for re-operation; (8) present technique; (9) the question of hemorrhage connected with the operation; (10) the result as to the voice. The various answers were analysed more or less in detail.

The general tenor of the seventy-seven answers to the first question showed that laryngologists have not concerned themselves very extensively with the physiology of the tonsil or as to its value as an organ in the throat. Thirty-four considered that the tonsil is of value, when normal, as an arrestor of the entrance of pathogenic organisms, and that in early life it assists leucocytosis and gives off phagocytes, losing these functions when diseased. Seven considered it a lymphatic gland of no special function, and nine as a producer of white cells when in a state of health. Ten considered that it has no function and no physiological value; four that it secretes an antitoxin and furnishes moisture to assist in deglutition, and five considered its function unknown.

The majority were of the opinion that there is a direct relationship between enlarged cervical glands and the tonsil, the tonsil being apparently the gland through which the infecting agent comes, as evidenced by the cessation of adenitis after removal of the tonsils. Only thirty-nine out of the one hundred and thirty who replied to the third question had knowledge of any connection between the tonsil and tuberculosis. From the conflicting testimony on this subject it would seem that the question of the entrance of tubercle bacilli through the tonsil has not been sufficiently determined to render the fact an undisputed one. The relation of the tonsil to rheumatism presented an interesting field, complicated by the doubt as to the aetiology of the disease. The investigations of the various authors show the possibility and probability of the tonsil as a portion of infection, and prove that

whatever of protective value to the organism the tonsil may theoretically have, it is practically of little value; on the contrary, it is not infrequently a decided menace.

The weight of evidence was against the use of chemical caustics.

The indications for the removal of the tonsil were given as follows: Recurrent tonsillar abscess or quinsy; recurrent simple tonsillitis; diseased crypts, with or without hypertrophy; the co-existence of rheumatism and tonsillitis; mouth-breathing; general toxæmia of tonsillar origin; impaired nutrition, and systemic dyspnoea. Opinions differed concerning the removal of the tonsil in the presence of tuberculosis, some holding that it is not only of no advantage to do so, but that it is a serious disadvantage, in some instances hastening the tuberculous process.

The opinions given in answer to the question as to the preference for tonsillotomy or tonsillectomy showed a gradual perceptible change toward the more thorough operation of tonsillectomy. The necessity for re-operation was not noted when tonsillectomy had been performed, the opinion being held that the remnant of tonsillar tissue left after tonsillotomy is susceptible of becoming hypertrophied.

With reference to the question of anaesthesia there was a decided difference of opinion. Sixty-three use ether as an anaesthetic for children; ten, gas and ether; ten, chloroform; one, chloroform up to twelve years of age, ether after this age; seven, ethyl chloride; five, somnoform; two, nitrous oxide; three, ethyl bromide; two, ethyl chloride and chloroform.

The preference as to the position of the patient for operation was given by twenty-five to the dorsal for children under general anaesthesia; the prone position, one side or the other, was favoured by forty; the semi-recumbent by two; the Rose and Trendelenberg by seven, and the upright by twenty-seven. The author, comparing reports of accidents, hæmorrhage, and the like, did not find them more common when the upright position was employed than when the patient was put in the dorsal or recumbent position. He advocated the upright position unless there were manifest reasons in favour of one of the other positions.

The trend of the reports given showed a leaning toward the complete enucleation of the tonsil, with the capsule, the technique varying with the individual operator. The author advocated finger enucleation, holding that the separation of the capsule from the muscle could be made very readily and thoroughly with

the finger. One advantage of the finger-nail for this purpose was that in buried tonsils, where it was hard to get good traction with the forceps without tearing, and where there might be danger of cutting the pillar with sharp instruments, it was possible by the sense of touch alone to do nearly the entire dissection.

A great variety of experience was shown with reference to the question of hæmorrhage, the reports varying from no hæmorrhage at all to 40 per cent., while secondary hæmorrhage occurred from one to seven days after operation. From the reported cases there was no particular proof that dangerous bleeding occurs more often in adults than in children. In addition to hæmorrhage, injury to the uvula, pillars or palate, quinsy from incomplete operation and as a result of injury with snare, double otitis media with double mastoiditis, and acute otitis media, were some of the accidents reported.

The question of injury to the voice following the removal of the tonsils was answered guardedly by those who have had most experience with professional singers, admitting that for the time at least there is an alteration in the voice, followed later, as a rule, by improvement, most of them having found that higher tones were obtainable than before. The author believed the range and power of the voice should be increased, provided the pillars are uninjured, after complete tonsillectomy, as in many cases the tonsil, by its firm attachment to the pillars, especially if enlarged, hindered the mobility of the muscles. He had always believed that the reported cases of injury to the voice were due to the fact that the tonsil stumps were still present, hindering the mobility of the muscular action, or else that the pillars themselves were injured by the operation.

Dr. AMOS R. SOLEXBERGER said that until more exact knowledge of the function of the tonsil was obtained it was best to make every reasonable effort to maintain and restore its health. He considered the salvation of the tonsil in childhood most important. Next in importance was the causal relation between certain systemic diseases and diseased tonsils. Cases requiring operation should be selected with greater discrimination. Much operative work was still done superficially, not always because the indications were not clear, but because it was still regarded as a minor operation; furthermore, neither the physician nor the patient quite comprehended its far-reaching import. This condition of affairs would be overcome by more comprehensive knowledge of the subject; by insistence, in the face of clear indications, upon

more radical work; by respecting its dignity as a major operation, and by observing the precautions which apply in major surgery.

Dr. G. HUDSON MAKEN believed there exists a very decided relation between diseased faucial tonsils and cervical adenitis. A probe could be passed from a diseased cervical gland into the tonsil. He cited the cases of two children referred to him, both having enlarged cervical glands. In one the gland was as large as a small tumbler, and in the other it was much smaller. The tonsils were removed in each case, and, strange to say, the child with the very large gland was nearly well within a week, whereas the child with the small gland had a marked increase in the swelling in the neck, with decided tenderness to touch. These cases showed the relation which exists between tonsils and the cervical glands. A normal tonsil was scarcely demonstrable without pulling the pillar forward and outward, and of course it should not be removed. He was fully aware that a hypertrophied tonsil was not necessarily diseased, although the majority of them were. When a tonsil was diseased, it was diseased not in part but in its entirety, and therefore it should be removed in its entirety. He would as soon think of leaving the diseased root of a diseased tooth in the alveolar process as of leaving a portion of a diseased gland in the fauces. Referring to the subject of "adhesions," he thought the speakers should make a distinction between normal and pathological adhesions. That pathological adhesions were found no one would deny, and that the tonsils were normally adherent, or attached, to the pillars was equally apparent. The question of injury to the voice, supposedly resulting from the removal of the tonsils, usually emanated from teachers who were opposed to surgery. It was absurd to think that tonsillectomy injured the voice.

Dr. CHARLES W. RICHARDSON said that the influence of tonsillar inflammation upon the other organs and upon the adjacent glands was undoubtedly very pronounced. Inflammation in the deep cervical glands following tonsil operations was not infrequent. On the other hand, he had seen glandular hypertrophy of a chronic character disappear after removal of the tonsils. Rheumatic affections of various types were often of tonsillar origin. He cited two cases in which there had been rheumatic manifestations. In one case the tonsils were removed five years ago, and in the other four, and in neither had there been any signs of rheumatism since a month after extirpation of the glands. He had seen marked tuberculous infection of the tonsil where all

efforts to find evidence of pulmonary invasion failed, both by physical signs and sputum examinations. After the ulcer in the tonsil healed he almost doubted its tuberculous nature. About six months after the ulcer healed the patient returned, with no pain whatever in the larynx, yet with the upper half of the epiglottis gone. He subsequently died of pulmonary tuberculosis. With reference to radical tonsil operations, he considered that diseased tonsils—which included hypertrophied tonsils—should be extirpated, but he denied the necessity for the removal of tonsils which were not enlarged and that had never given rise to any disturbance within its own borders or elsewhere. As to the method of enucleation, it should be thorough by whatever method one chose to employ. Since coming under the influence of Dr. Richards, he had been convinced that the finger dissection was the proper method when it was desired to remove the tonsil with its capsule.

Dr. GEORGE F. KEIPER said it was interesting to note that there was a return to the methods of 1846 and before. Those who had read the first work on laryngology published in this country, Dr. Horace Green's, which he called "Bronchitis," are aware of the fact that the operation for total removal of the tonsil was described and insisted on by Dr. Green.

Dr. WILLIAM L. BALLENGER (Chicago) had never known before that the finger dissection, which was a very old method, was of such universal application. For nine years he had been publicly proclaiming that the tonsil should be removed intact. He recognised the fact that if all the tissue except the capsule were removed it was a good operation, but he would be inclined to mistrust the statement that the entire tonsil was removed unless its capsule was shown with it. That was why he had insisted upon the removal of the tonsil with its capsule intact, not upon any particular method of removal. He agreed with Dr. Myles with reference to adhesions of the tonsil to the pillars. He had removed thousands of tonsils, and in his experience it was very rarely that pathological adhesions were found. There were many things which might deceive one in this regard. Many operators thought they had encountered adhesions when, after cutting through mucous membrane and loose areolar tissue, they do not at once go behind the capsule. When they get into the capsule and meet this resistance in trying to get out again they think they have encountered adhesions. One writer had for years referred to the *plica tonsillaris* as an adhesion, when it was nothing of the sort. As a matter of fact, pathological adhesions were very rare.

Dr. B. R. SHURLY held that in rheumatic or septic invasions of tonsillar origin, in quinsy, and where there were pockets in the tonsil, complete tonsillectomy was the procedure to be followed.

Dr. LEE M. HURD said a large discrete tonsil did little harm, causing no enlargement of the glands of the neck or other trouble. He judged a tonsil more, with reference to the operative procedure, by the condition of the deep chain of cervical glands than upon any other condition, advocating tonsillectomy in the event of their enlargement. He had had less hæmorrhage from tonsillectomy than from tonsillotomy.

The soreness of the throat depended upon how much the tissues were injured. He had studied a series of twelve cases with Dr. Wright, in all of which the glands were enlarged, in most of which were stumps left after tonsillotomy, and in which there was tuberculosis of the tonsil, demonstrated by the microscope in nine cases. Tubercle bacilli were found in two cases. One patient with tuberculosis had been operated upon eleven times for tuberculosis of the glands of the neck. He did not believe the voice was affected by tonsillectomy unless there was injury to the pillars. He had removed the tonsils from a baritone singer, who sang in opera two weeks after the operation, with no change in his voice and with no subsequent trouble.

Dr. RICHARDS, in closing the discussion, called attention to some drawings illustrative of the so-called "submerged" tonsil and other varieties.

#### NASAL OBSTRUCTION: EXPERIMENTAL STUDY OF ITS EFFECT UPON THE RESPIRATORY ORGANS AND THE GENERAL SYSTEM.

By DR. WILLIS S. ANDERSON (Detroit).

The paper dealt with the following subjects: (1) Anatomical differences between the throats of animals and man. (2) The effect upon the lungs, heart and general nutrition following the obstruction of one or both nostrils of guinea-pigs and rabbits. (3) The production of asthma and emphysema in animals by obstructing the nose. (4) The effect upon the progeny, when one or both parents have nasal obstruction. (5) The effect upon the hair, skin, and general nutrition of dogs. (6) Increased susceptibility to infections, and variation in susceptibility according to the age of the animal. (7) Histological changes in the lungs and other organs. (8) Practical deductions to be drawn from the experimental work.



The following conclusions were suggested by the experiments: (1) That nasal obstruction leads to death, or to serious impairment of vitality. (2) That the lowered resistance predisposes to infections. (3) That local disease of the respiratory tract is induced. (4) That obstruction of the nostrils leads to dilatation of the heart. (5) That changes in the skin and the blood of dogs occur. (6) That symptoms resembling asthma and emphysema may be induced in the lower animals. (7) That re-opening the occluded nostrils is followed by prompt disappearance of the symptoms.

(*To be continued.*)

## Abstracts.

### PHARYNX.

**Haenisch, H.** (Kiel).—*On the Pathological Anatomy and Etiology of Black, Hairy Tongue.* "Arch. für Laryngol.," vol. xx, Part III.

The author gives a detailed account of the histological and bacteriological findings in a case of this condition, and carefully reviews the literature of the subject.

He is convinced that the affection is not of the nature of a mycosis, and that the black fungi which are occasionally present are not of aetiological importance. He finds that the pigmentation of the abnormally elongated filiform papillæ is due to keratinisation of their tips, and that the longer the papillæ become, the greater is the degree of horny change and the deeper the resulting pigmentation. The process is probably similar to that found in keratosis pharyngis, the aetiology of which is, however, still doubtful, although some light has been thrown upon it by the researches of Liebenmann and Onodi and Entz.

*Thomas Guthrie.*

**Marschik, Hermann.**—*Septic Haemorrhagic Pharyngitis.* "Monats. für Ohrenheilk.," Year 43, vol. I.

A case which the author describes under this title forms the subject of an account of what appears to have been an instance of a general septic infection of an extremely virulent nature and running a very rapid course, the main features of which were progressive dyspnoea and dysphagia.

The patient, a postman, aged fifty-four, was brought in an ambulance to Professor Chiari's clinic on the night of February 6, 1908, by his wife, who stated that he could no longer make himself understood. He had always been a healthy man and had first complained of feeling unwell and of headache that morning, and it was not till that night that he had experienced any difficulty in swallowing or breathing, which then came on suddenly and was accompanied with fever. She could assign no cause for the illness.

The patient was a strongly built and well-nourished man, but his present condition at once suggested some grave general infection. The

face was pale, the eyes half closed, the lower part of the face and the neck extremely swollen; pulse 140 and great dyspnoea, on account of which the breathing was very rapid.

Further examination disclosed so great a swelling of the pharynx that its lumen was almost occluded, but the most striking point, however, was the appearance of many dark bluish or brownish-red spots on the surface of the mucous membrane which were obviously due to submucous hæmorrhage. Petechiæ were also seen on both the flexor and extensor aspects of the upper arms and on the lower extremities.

The urgent character of the dyspnoea necessitated immediate tracheotomy, which Dr. Marschik performed, but although a free air-passage was thereby obtained the patient seemed very little relieved, and a sero-purulent secretion at once filled the tracheotomy wound and was only partially expectorated. (An examination of this material showed only numerous streptococci and many pus cells.) The pulse became more frequent and running, and was unresponsive to both intra-muscular and intra-venous injections of digitalin, and the patient died comatose the next morning at 11 o'clock.

On account of a suspicion of the very infectious nature of the disease the *post-mortem* was made the same day by Professor Weichselbaum.

This revealed the presence of an acute hæmorrhagic inflammatory condition of practically all the mucous membrane of the alimentary tract down to the stomach, in which ecchymoses were found, and of the larynx, trachea and bronchi, whilst the lungs were œdematous and contained patches of hæmorrhagic lobular pneumonia. There was also serous pericarditis and parenchymatous degeneration of the myocardium and kidneys. The brain was also œdematous and the left antrum of Highmore was especially noted as being affected in this pathological process.

Sections were cut of various portions of the areas affected and subjected to histological examination, the result of which all pointed to the fact that the infection was of an extraordinary virulent nature, as the clinical evidence had, indeed, already demonstrated, since no pus-cells were found in the tissues, only mono- and polynuclear leucocytes. Streptococci were found in large numbers in the submucous tissue, but the superficial layers and even the hæmorrhagic areas contained no bacteria, with the exception of the sections from the uvula, where they were abundantly distributed throughout the whole structure.

Marschik concludes his account with a critical discussion as to the ætiology of the case and again lays stress on its extremely rapid course—from the occurrence of the first symptom to the time of death was less than fourteen hours. He thinks the left maxillary antrum may be excluded as the site of origin of the disease, though at first sight that might appear probable, as the inflammatory condition of that cavity was in a much earlier stage than the other parts affected, and the hæmorrhagic spots here were not found, and he submits that this case really belongs to a category of its own, since it does not conform to any other descriptions of septic throat.

Alex. R. Tweedie.

**Williams, Leonard.**—*Adenoids, Nocturnal Incontinence, and the Thyroid Gland.* "Lancet," May 1, 1909.

The author, after detailing fifteen cases, points out that adenoids can no longer be regarded as a cause of nocturnal enuresis, but that the latter is due to an insufficiency of the internal secretion of the thyroid gland, and is ameliorated by administration of thyroid extract. In treating

cases by this method the question of dosage is of paramount importance, and it is essential to success that the initial dose should be very small.

*Macleod Yeatsley.*

**Rouvillois.**—*A Case of Palatine Insufficiency.* "Rev. Hebd. de Laryngol., d'Otol., de Rhinol." December 26, 1908.

The case described is that of a young adult male who suffered from a defect of speech, and slight occasional trouble during deglutition from food passing into the naso-pharynx. This condition was due to an inability to bring the velum into contact with the posterior pharyngeal wall. The defect had persisted since infancy; it was caused by imperfect contraction of the muscles, and not by an undue shortness of the velum.

*Chichele Nourse.*

**Mouret, Jules** (Montpellier).—*Median Pharyngotomy.* "Rev. Hebd. de Laryngol., d'Otol., et de Rhinol." October 17, 1908.

The author explains his preference for transhyoid pharyngotomy instead of the subhyoid operation. Where the extent of the tumour to be removed renders the former procedure insufficient, it can be combined with median thyrotomy. This combined operation, of which a full description is given, serves for growths situated in the epiglottic region as well as for those which lie at a lower level in the laryngo-pharynx. When the epiglottis itself is not involved and is a hindrance to free access, it can be split in the median line, and the two halves re-united by sutures at the conclusion of the operation. A tube should be left in the oesophagus, and the cannula retained in the trachea for three or four days.

*Chichele Nourse.*

## NOSE.

**Horeau, A.** (Nantes).—*A Case of Complete Functional Impotence of the Nose.* "Revue Hebd. de Laryngologie, d'Otologie, et de Rhinologie," December 26, 1908.

In this case the patient, a woman, aged thirty-six, had no mechanical obstruction to nasal respiration. A nasal spur and the anterior extremity of the inferior turbinal on the right side had been removed three years before with temporary relief. Then occurred a discharge of pus and crusts from the right nostril, which was followed by an atrophic condition and complete loss of the sense of smell on that side.

The patient was completely cured by a course of nasal gymnastics.

*Chichele Nourse.*

**Steiner, M.** (Budapest).—*A Contribution to the Further Study of Ozaena.* "Arch. für Laryngol.," vol. xxi, Part II.

The author has made careful observations of thirty-four cases of atrophic rhinitis with a view to ascertaining the relative frequency of the various symptoms and pathological conditions met with. Of these cases twenty-one were under twenty years of age and in several the disease was said to have been present since infancy. Seventy-eight per cent. presented a definitely characteristic type of facies, and this was apparently due to congenital shortness or imperfect development of the basis cranii. Atrophy of the middle turbinate was found in one third of the cases, and of the inferior turbinate in all but two cases. In only 15 per cent. was the disease associated with accessory sinus empyema.

From the aetiological standpoint the writer distinguishes four varieties of atrophic rhinitis:

- (1) Fränkel's form, apparently of congenital origin.
- (2) A purely mechanical variety due to pressure-atrophy, and making its appearance after the removal of large, simple growths from the nose.
- (3) Grünwald's form, resulting from accessory sinus disease or other chronic suppurative processes (adenoids, bursa pharyngea).
- (4) The variety which follows syphilitic bone disease.

Thomas Guthrie.

**Frese, O. (Halle).—***The Relations of Syphilis to Ozena.* "Archiv für Laryngol.," vol. xx, Part III.

The author is careful to state that by the term "ozena" he understands a diffuse disease of the nasal mucous membrane characterised by the three cardinal features of atrophy, crust-formation, and fœtor, and by complete absence of necrosis or ulceration. That syphilis bears some part, direct or indirect, in the causation of atrophic rhinitis, although denied by most observers, has been maintained by a few, among them Gerber, who found evidences of congenital syphilis in a "considerable proportion" of sixty cases of ozena which he examined.

The writer argues from a material of sixty-one cases of ozena, in which he made an exhaustive examination, not only of the nose, but of the whole body. Of these cases five presented characteristic and unmistakable evidences of congenital syphilis, and, at the same time, in the nose a typical ozena without any trace of specific destructive processes. Eleven more cases had with great probability been the subjects of congenital syphilis.

With the exception of a few instances in which the nasal affection appeared to have followed an acute infectious disease, there seemed in the author's cases to be but one probable aetiological factor, namely, congenital syphilis, a disease from which 26.2 per cent. of his patients had either very probably or certainly suffered. The conclusion is therefore reached that, in at any rate a considerable number of cases, ozena is to be attributed to direct local damage to the nasal mucous membrane caused by the syphilitic virus during early life. It is further supposed that this damage results in a gradually advancing atrophy, which may only give rise to symptoms during later years.

It is held that the typical ozena, which may apparently be due to congenital but never to acquired syphilis, finds its analogue in the "ozena post-luetica," which follows tertiary syphilis of the nose, and is characterised in addition to its destructive features by the widespread atrophy, crust-formation, and fœtor of true ozena.

Thomas Guthrie.

**Richardson, C. W. (Washington).—***The Operative Treatment of Deflection of the Nasal Septum.* "Amer. Journ. Med. Sci.," February, 1909.

Previously to 1904 the writer had done "all his operative work on the septum" by a method of his own, which included the removal of a wedge-shaped segment of bone from the osseous septum, partly by means of the saw and partly by fracturing the nasal spine. Retentive apparatus (the Kyle aluminium splint) was used for seven days. He considers that this method yielded him unusually good results. There were, however, still a sufficient number of unsatisfactory cases to make an improved method desirable. Since 1904 he has performed 190 operations by the submucous method, and has become convinced that this is the method of choice

provided that the operator possesses sufficient skill. During the last two years he has always employed general anæsthesia. His results have been uniformly good as regards relief of stenosis, contact with the turbinals and relief of reflex symptoms. He has had in all 3 per cent. of perforations, but only one in the last eighty cases.

*Thomas Guthrie.*

**Denker, A.** (Erlangen).—*The Operative Treatment of Malignant Tumours of the Nose.* "Arch. für Laryngol.," vol. xxi, Part I.

After passing in review the various operations which have been employed, the writer gives a detailed description of his own method. He has hitherto made use of this method seven times for the removal of tumours, and twice for cases of extensive combined disease of a suppurative nature, involving the antrum and the ethmoid and sphenoid sinuses. Brief accounts are given of six of the seven tumour cases. Only one of the six cases has remained free from recurrence one and three quarter years after the operation; two other cases are, however, at present well, although in them a second operation was required. In all the cases the disease was advanced, and of a very unfavourable type, whether considered from the point of view of its situation or of its histological characters.

The writer claims for his method that it allows as good an exposure and as complete a removal of the growth as any of the other operations which have been suggested; that the cosmetic result is practically ideal; that the aspiration of blood during the operation can be almost entirely prevented and that without preliminary ligature of the carotid or tracheotomy; and that the after-treatment is very simple and of short duration.

*Thomas Guthrie.*

**Kubo, I.** (Fukuoka, Japan).—*On the True Place of Origin of the Solitary Choanal Polypus, and the Radical Operation for its Removal.* "Arch. für Laryngol.," vol. xxi, Part I.

The author relates in full his observations on four cases of choanal polypus. He believes the condition to be always associated with inflammation or suppuration of the maxillary antrum, which as a rule contains polypi. The choanal polypus is in connection with the polypoid lining membrane of the antrum, and its stalk generally passes through the accessory ostium, which in this case is large and easily found with a probe. He prefers the name "antro-nasal" or "antro-choanal polypus," and believes that the condition is best treated by performing the radical operation on the antrum and removing its entire living membrane, and in one piece with it the "choanal" polypus, which can be drawn back through the accessory ostium and removed *via* the antrum.

*Thomas Guthrie.*

**Kahler, Otto.**—*Congenital Bony Atresia of the Choanae.* "Monats. für Ohrenheilk.," Year 43, vol. I.

Commencing with a survey of the various classifications into which different writers have described this anomaly, Kahler suggests that it is most convenient to adopt the views held by Schwendts, and agrees with him that the bony occlusion of the posterior choanae, which is doubtless of congenital origin, should be regarded as the typical form, whilst all other atresia, either membranous or bony, should be considered atypical.

He then gives a detailed account of nine cases which have come under his observation in Professor Chiari's clinic, and summarises the results

in a most clear and exhaustive commentary. For the purposes of comparison and record twenty-one other similar cases published by various observers have been arranged with the author's own nine in tabulated form, thus adding considerably to the value of the article from the point of view of reference, though, indeed, those interested in the subject will certainly find the whole monograph well worth careful perusal.

Supported by the fact that there was no history or appearance of past inflammatory or infective lesions, such as lues, lupus or scleroma in his cases, Kahler commences his review by stating that he regards all of them as instances of "typical congenital bony atresia of the choanæ."

The condition occurred on both sides in two cases and on one side only in the remaining seven, but according to his researches amongst other accounts the bilateral lesion would appear to be nearly as often met with as that involving one side alone. Eight out of the nine patients were women, but again in consideration of other reports he thinks this inaccurately represents the right proportion, and regards it as purely accidental.

The posterior border of the hard palate and posterior edge of the nasal septum could be easily felt as projecting beyond the bony plate occluding the choanæ in all the nine cases, pointing to the fact that the atresia always really lies in a plane anterior to the posterior nares. No remarkable difference in size was noted between the occluded and normal choanæ, and the capacity of the nose was not found diminished.

The thickness of the plate of bone varied, being thinner in the centre than at the periphery—a matter of importance from a surgical point of view.

He regrets that no histological examination of portions removed could be carried out, but the operation is of necessity performed "piecemeal," and suitable pieces were not obtained. However, a report is quoted from Hochheim's account of similar structures, which are described as corresponding roughly to the hard palate—as, indeed, one would expect—that is to say, it consists in a piece of bone covered on one side with mucous membrane, such as is found in the nasal cavity, and on the other furnished with a lining similar to that of the naso-pharynx.

It was especially noticeable that in the two cases where the condition was double-sided the naso-pharyngeal vault was remarkably capacious and was quite normal, whilst in only two of all the cases under the author's care were any adenoid growths found. It was also noted that posterior rhinoscopy was more easily performed than is usual, which Kahler attributes to this unusual size of the space, and to the fact that the soft palate seemed comparatively insensitive; at the same time no paresis of the palate was noticed.

One of the main characteristics was an abundant accumulation of light grey tenacious mucus in the occluded nostril, and in association with this an eczematous condition of the vestibule was a most frequent occurrence; further, in one case mucous polypi were found complicating matters.

The turbinate bodies did not show any particular departure from the normal in their form or construction, though their mucous membrane at times was hypertrophied; and in no instance was any adhesion detected between them and the bony occlusion posteriorly.

Most of the patients had or had had some chronic catarrhal aural affection, otherwise nothing noteworthy was observed in this respect. The speech was of the "nasal" character in the double-sided cases, as

one would expect, but in the remaining patients nothing peculiar was noted under this head.

Kahler enters into a long discussion on the correlation between buccal breathing, the shape of the hard palate, the capacity of the nostrils and the facial appearance. He reviews the opinions which various writers have given as to the influence of these factors on one another and the manner in which they are supposed so to act, and then proceeds to compare these theories with the actual conditions noted in his own cases, which he pertinently remarks ought of all cases of nasal impairment to bear testimony to these theories if they are correct. In the end he comes to the conclusion that there is certainly a causal relation between buccal breathing and the height of the hard palate, but beyond this he cannot find sufficient evidence as to its effect on the patency of the nostrils or the facial aspect, and considers that other developmental influences play a part in this question as well.

The apparent freedom from any discomfort under these conditions was another remarkable point, so much so that patients suffering with this affection often only apply for treatment quite late in life, and in only two of his cases would there seem to have been any trouble in nursing during infancy, but in these two instances it had, indeed, been found necessary to feed the baby with a spoon. However, even this inability did not prompt the mother to seek advice, and it was not till the child had become the butt of her schoolfellows, because she could not blow her nose, that she was brought to the clinic.

Anosmia was, however, a constant symptom, but the olfactory epithelium was unimpaired, since the patients all recovered their sense of smell immediately after the operation.

This was performed with chisel and mallet with the fore-finger introduced into the naso-pharynx as a guide and control, and for the completion of the opening the cutting forceps used to remove the anterior wall of the sphenoidal sinus were found useful. Especial stress is laid on the necessity of a prolonged after-treatment, which Kahler says often must extend over a period of many months in order to avoid the closure of the posterior nares, and on this point he thinks the entire prognosis depends. As regards the manner in which this is carried out he has sometimes used hard rubber splints, and at times rubber drainage-tubes, whilst he has also found plugging with gauze the most convenient treatment in other cases.

With respect to the aetiology of this condition, Kahler considers that any exact statement as to its mode of origin and cause must be reserved till the opportunity is afforded of making accurate examinations of specimens in the recent state, but he provisionally associates himself with the theory that it is the result of the persistence of the fetal bucco-nasal membrane.

A reference to the literature on the subject concludes the account.

*Alfred R. Tweedie.*

**Logan Turner, H.**—*The Orbital Complications of Suppuration in the Frontal and Ethmoidal Air-Sinuses.* "Edinburgh Med. Journ.," May, 1909.

The anterior group of nasal accessory cavities lies in relation to the anterior half of the floor, inner wall, and roof of the orbit; the posterior group lies in close relation to the posterior half of the inner orbital wall, to the sphenoidal fissure and optic foramen, and sometimes also to the

floor and roof of the orbit posteriorly. Consequently inflammatory conditions of the anterior group of cavities may be responsible for œdema and swelling of the eyelids, orbital periosteitis and sub-periosteal abscess, dacryocystitis and peri-dacryocystitis. On the other hand, retro-bulbar neuritis, optic atrophy, and paralysis of ocular muscles more frequently owe their origin to diseases of the posterior group of cavities. Infection spreads from the nose and its cavities to the orbit—(1) through congenital dehiscences in the intervening walls, (2) by caries and destruction of the walls, (3) by thrombo-phlebitis or septic thrombosis, (4) along the lymphatics. Turner gives the histories of nine cases of suppuration in the air-sinuses with orbital complications; six females and three males, of ages varying from twelve to sixty years. In seven cases the frontal sinus and in two the ethmoid cells were probably the sites of the primary infection. In six only one sinus was affected, in the rest two or more were involved. In six the onset of symptoms was acute, while in three the condition was chronic. It is interesting to note that the acute cases were young people, five being under twenty and the sixth under thirty years of age. The orbital complications may be grouped in three degrees of severity, viz. in two cases œdema of the lids, in six cases sub-periosteal abscess, in one case suppuration involving the orbital fat and muscles.

CASE 1.—Female, aged seventeen. Redness and swelling of left upper eyelid of four days' duration; acute suppuration of left frontal sinus. *Operation*: Removal of left middle turbinal, simple frontal sinus operation, later radical frontal sinus operation; recovery. The pus in the sinus at first operation contained pneumococcus.

CASE 2.—Male, aged seventeen. Redness and œdema of right upper and lower eyelids of four days' duration. Acute suppuration of right frontal sinus. *Operation*: simple frontal sinus operation followed later by radical operation; recovery. Pure pneumococcus.

CASE 3.—Female, aged twelve. Sub-periosteal orbital abscess, œdema of eyelids, proptosis and outward displacement of eye, probably secondary to acute suppuration of left frontal sinus of two days' duration. Operation on orbital abscess: A few drops of pus evacuated; ethmoid cells and sphenoid sinus explored, no pus found there; middle turbinal removed; recovery. Diplopia on near vision when last seen.

CASE 4.—Female, aged eighteen. Sub-periosteal orbital abscess, swelling and redness of eyelids of three days' duration, proptosis of eyeball and chemosis of lower part of ocular conjunctiva, probably secondary to acute suppuration of left frontal sinus. Operation on orbital abscess by incision and raising periosteum from os planum and roof of orbit; a few drops of pus evacuated; ethmoid cells explored, no pus found; recovery.

CASE 5.—Male, aged twenty-five. Recurring sub-periosteal orbital abscess, probably secondary to right frontal sinus inflammation. Orbital abscess incised on three occasions; no recurrence since third opening.

CASE 6.—Female, aged fourteen. Following a slight blow on the nose, swelling of left eyelids, proptosis, inflammation of conjunctiva, ulcer on cornea, blindness. An incision through upper eyelid evacuated gas and pus, in which were various micro-organisms; later a long incision was made below supra orbital margin. The pus had invaded the orbital fat and muscles, and had destroyed the lacrimal bone and os planum. The left middle turbinal was removed and the ethmoid cells destroyed. The condition improved; then erysipelas set in, but passed off in a few days; later the patient became comatose and died. *Post-mortem*: Pus was found in the left frontal, ethmoid, and sphenoid sinuses; a small



perforation in the roof of the left orbit communicated with an abscess in left frontal lobe. An extensive suppurative basal meningitis extended over the interpeduncular space, pons Varolii and medulla, and lower surface of each lateral lobe of cerebellum. There was pus in the left cavernous sinus.

The following three were cases of chronic nasal suppuration:

CASE 7. Male, aged thirty-four. Sub-periosteal orbital abscess, no swelling of lids, no proptosis, but a small swelling at inner end of left upper lid, into which a probe could be passed through a fistula. Large left middle turbinal, pus in middle meatus. Operation revealed destruction of part of lacrimal bone and os planum. The middle turbinal was removed and the ethmoid cells broken down; recovery in a few weeks.

CASE 8.—Female, aged forty-eight. Epiphora for two years; for some months swelling of left upper eyelid, forward, downward, and outward displacement of eyeball; small sinus just below centre of left supra-orbital margin, discharging thick greenish pus; diplopia. At the operation a hole was found in the floor of the left frontal sinus; pus was found in frontal sinus, anterior ethmoid cells, and antrum; the frontal sinus was obliterated, the cells broken down, and the antrum opened through alveolus; recovery. A pure culture of *Streptococcus hirs* was made from the pus from frontal sinus.

CASE 9. —Female, aged sixty. Swelling of left upper eyelid began eighteen months before admission, remained constant for about a year, then began to increase, and pains began to occur in left eye; about two months later had an attack of influenza, during which she noticed discharge from *right* nostril. The amount of swelling varied; no headache; eyesight not interfered with; no epiphora; no diplopia. On admission left upper eyelid red and oedematous, and a tense swelling occupied middle and inner thirds of upper eyelid. Left side of nose normal; pus in right middle meatus; right middle turbinal oedematous. At the operation it was found that the whole floor of the left frontal sinus had been absorbed, the sinus was full of pus; no ostium frontale could be found, but there was a perforation of the interfrontal septum. At the operation, therefore, the left frontal sinus was obliterated without any attempt being made to open down into the left side of nose. The right frontal sinus was also obliterated, a large free opening being made into right side of nose; recovery.

In the pus were found *Bacillus mesentericus*, *Micrococcus catarrhalis*, *Staphylococcus pyogenes albus*, bacillus of Hoffman, and a bacillus not identified.

These nine cases occurred in the author's practice during seven years, and form 7 per cent. of the cases of acute and chronic frontal and ethmoidal suppuration coming under his observation in the same time.

Arthur J. Hutchison.

## LARYNX.

Sargnon (Lyons).—*Direct Endoscopy, especially in its Application to Laryngology*. "Archives Intern. de Laryngol." 1908-1909.

In this work the author studies the result of his experience in regard to—

- (1) The respiratory passages;
- (2) The digestive passages;
- (3) The other orifices of the organism.

*General Scheme of Direct Endoscopy.*—This includes a source of illumination and a hollow metallic tube supplied with a mandrin. Following de Cigna's example, the author uses for the œsophagus and larynx a mandrin curved like a crutch catheter (*sonde à béquille*), which facilitates the introduction of the rigid tube, whether by intubation or indirect laryngoscopy. A series of mandrins are adapted to the same introduction tube. Like Moure, he always employs Clar's frontal lamp, which greatly simplifies the technique for the various modes of endoscopy. The use of the hydraulic fluid extractor (*trompe à eau*) makes the manœuvres much easier. Local anæsthesia serves in particular for œsophagoscopy, direct laryngoscopy, inferior or retrograde tracheoscopy, inferior gastroscopy, and, in exceptional cases, proctoscopy. General anæsthesia is reserved for œsophagoscopy and tracheoscopy in difficult cases, accompanied by operative extraction or section. General anæsthesia is to be avoided in elderly people with œsophageal strictures, and in the subjects of bronchitis or slight pyrexia on account of pulmonary complications, which are sometimes most serious.

(1) *Endoscopy in the Respiratory Passages.*—The author has used direct laryngoscopy in a case of diffuse papilloma; the child was cured by tracheotomy and repose of the larynx (Vignard and Sargnon). It is chiefly for those wearing cannulas and cannula tubes that direct laryngoscopy has been used by the author, and above all after the failure of Escat's forced laryngoscopy. The lower tracheal opening is very useful for examining the trachea by means of the short tracheoscope with a fenestrated metal mandrin, and also in order to diagnose the inferior decubital ulcers from the presence of the cannula or papilloma beneath the cannula, and to search for foreign bodies; the author reports a case of extraction of a sequestrum of the cricoid which had fallen into the trachea (Poucet and Sargnon).

In a young child he removed a drainage-tube which had fallen into the trachea. He points out the difficulty of the diagnosis between œsophageal foreign bodies arrested at the level of the bronchial bifurcation and intra-bronchial foreign bodies (a case of Vignard and Sargnon). He has used direct subglottic and retrograde tracheo-laryngoscopy a great deal, and employs for this a fenestrated tracheoscope which allows of respiration. The examination is made in Rose's position, with extreme inversion.

(2) *Direct Endoscopy in the Digestive Passages.*—The author has always used direct hypo-pharyngoscopy with Killian's bivalvular tube-spatula. Œsophagoscopy, which is very often practised, is sometimes dangerous in those who are weak, those with pyrexia, and those who suffer from bronchitis. The author has observed with MM. Tixier, Gayet and Vignard, two cases of death from broncho-pneumonia, the first in a child who already had bronchitis, the other in an old man with pyrexia. It is preferable, if possible, to do rapid œsophagoscopy, which is less likely to lead to complications. The author has seen a series of cicatricial stenoses; so far he has always been able to get past them, even in the most difficult cases of very close and multiple stenoses. In two patients he practised internal œsophagoscopic œsophagotomy; one of these patients, who was very weak, died of broncho-pneumonia fifteen days after the operation, which had permitted of the passing of an endless gastro-buccal thread. In one case, seen with M. Nové-Josserand, no less than fifteen endoscopic examinations and dilatations were necessary for the patient to be able to swallow the endless thread, by which a satisfactory functional result was brought about. In these serious cases,

when gastrostomy is performed, the author combines the two methods of superior and retrograde œsophagoscopy, which is much easier and much better tolerated. Œsophagoscopy has made it possible to recognise many cases of stenosis, with or without ulceration, particularly the spasms accompanying subjacent neoplasms, and even to see a neoplasm of the pylorus which had been overlooked (Châtin and Sargnon).

The author employed œsophagoscopy in two cases of neoplasm at the orifice of the œsophagus with bilateral recurrent compression; one had had tracheotomy performed and died of broncho-pneumonia.

With regard to the extraction of foreign bodies, the author uses Kirrison's hook in recent cases, releasing the foreign bodies under cocaine with his œsophageal cotton-wool holder when it is possible to push them back (pieces of meat, small bones, and even fish-bones). With Vignard and Thévenot he has seen a traumatic œsophago-tracheal fistula with subcutaneous emphysema in a child who had swallowed a stone. Œsophagoscopy is used for other cases. The author treats certain spasms of the œsophagus by means of direct cocaineisation with his œsophageal cotton-wool holder; in a patient with severe stenosis he was in this way able to avoid a gastrostomy.

He systematically uses proctoscopy, which is one of the easiest forms of direct endoscopy.

He notes particularly a case of spasm in a young patient suffering from mega-colon. Direct pleural endoscopy might be of service in cases of pleurisy complicated by the presence of foreign bodies. With Vignard he had observed a pleural gangrene of the pulmonary periphery, caused by a foreign body; an attempt at its ablation by way of the pleura had not been successful; the patient was too exhausted to permit of any other explorations; he died before there was time to make a second attempt.

The author considers that direct endoscopy in certain fistulas caused by foreign bodies may be of great service and simultaneously bring about a diagnosis of their presence and their removal. He has successfully used direct endoscopy of the maxillary antrum through fistulas of the alveolus and the canine fossa; for this he uses endoscopes 4 mm., 4½ mm. and 5 mm. in diameter, and has thus been able to ascertain that in simple empyema the mucous membrane may granulate slightly or not, whilst in true sinusitis the numerous polypi bleed at the least touch and are surrounded by multiple abscesses. Direct endoscopy of the maxillary sinus enables one—

(1) To ascertain the condition of the mucous membrane and consequently to know whether to perform a radical operation;

(2) To remove a fragment for examination in a case of suspicious growth;

(3) To extract sequestra.

In one case he had been able to extract a drainage-tube which had fallen into the sinus a month previously, to cauterise granulations with tincture of iodine, and to cure the patient without a radical operation.

To sum up, the author concludes that direct endoscopy, a rational method more or less easy of application according to the organ which has to be explored, is acquiring an increasingly great importance for diagnosis by means of visual data, and the possibility in many cases of a biopsy; it allows at the same time of the therapeutic removal of certain benign tumours, foreign bodies, and the incision and dilatation of cicatrices. It has already brought about many practical results in regard to the œsophagus, the larynx, the trachea and the bronchi, where its use is becoming almost

a routine. The other natural orifices are beginning to be benefited by it to a great extent. Its field of action, which is in great measure dependent on the laryngologist, cannot but increase.

*Author's abstract (trans. K. Dickson.)*

**Trumpp, J. (Münich).—***Concerning a Remarkable Anomaly, both from a Clinical and Anatomical Point of View, in the Larynx and Trachea, with some Reflections on the Ætiology of Congenital Laryngeal Stridor.* "Arch. f. Kindh.," vol. 1, 1909.

The author describes a case of a little boy, aged one and a half, that died from the effects of miliary tuberculosis. The *post-mortem* examination revealed what he considers to be a unique condition of the larynx and trachea, as the cricoid cartilage was partially lacking and represented by what would correspond to the upper border of a normal cricoid at that age, whilst only the lateral portions of the two first tracheal rings could be found, fibrous tissue completing the laryngo-tracheal tube in this situation. Three drawings are given illustrating the condition. The intrinsic muscles of the larynx were apparently normal but weakly developed, and the mucous membrane contained two abnormal pockets and was thickened in places with scar-tissue. The question as to whether all this should be regarded as due to an arrest of development, the result of disease or due to trauma (the child had been intubated), is discussed at length and an account given of the history, etc. The fact that no stridor occurred in this case under these conditions suggested to Trumpp this would be a suitable opportunity of reviewing the various theories as to the causation of congenital laryngeal stridor, a critical *resumé* of which he accordingly adds, and concludes with his own hypotheses on the subject. It is not easy, however, to gather in what way he really differs from other observers, although perhaps his explanations are given in different terms, but the article nevertheless forms a valuable digest of the various suggestions which have been offered to account for this pathological condition.

*Alex. R. Tweedie.*

**Perretière, A. (Lyons).—***Laryngeal Fatigue.* "Rev. Hebd. de Laryngol., d'Otol., et de Rhinol.," December 19, 1908.

The causes and signs of fatigue of the organ of voice from its excessive or improper use are first discussed. The most important part of this paper, however, consists in that which deals with the various effects of overwork, which can be seen on laryngoscopic examination. Simple congestion of the parts is the commonest; then follow alteration of form, paresis, and a peculiar type of catarrh. These lead on to the formation of vocal nodules, chronic laryngitis, polypi, and disturbances of the muscular apparatus. Rest is a remedy of the first importance.

*Chichele Nourse.*

**Imhofer, R.—***On Phonasthenia in Singers.* "Prag. med. Wochens.," 1909, xxxiv, S. 227.

Flatau was the first, in 1906, to publish a short monograph on functional weakness of the voice (phonasthenia), in which he described fully a condition which must have been frequently observed by every laryngologist. The author has observed thirty-six cases since Flatau's publication. Flatau defines phonasthenia as a disturbance or loss of function without a mechanical interference as the primary cause. Any waste of power may lead to phonasthenia, and therefore any incorrect method of voice pro-

duction, which is indeed the commonest cause of the condition, but it also frequently occurs in anemia. Most patients believe they suffer from cold; they have a feeling of mucus or something in their throat, and a constant desire to clear the throat. On examination nothing is found, or what means much the same—a great deal—slight turbinal enlargement, septal deviation, granules on the pharyngeal wall, etc., while in the larynx irregularity of the edge of the vocal cord or a sharply defined injection.

Certain evidence that this condition is present is obtained by testing the voice, for the trained ear can detect errors in the production of the sound usually in one register; this is most marked with soft notes, least marked when singing *forte*. This can be obviated by three methods: (1) By use of faradic current during intonation; (2) by compression of the larynx; (3) by vibratory massage. The author makes use of the first method; the tone then becomes pure, and the diagnosis of phonasthenia is complete. Treatment consists in the application of the faradic current.

W. G. Porter.

### EAR.

**Herschel, Karl.**—*A Case of Congenital Atresia of the Auditory Meatus in which the Auricle was Normally Developed.* "Monats. für Ohrenheilk.," Year 43, vol. iii.

Herschel has been able to find an account of only four such cases in the literature on the subject and remarks on the apparent rarity of this combination.

His patient was an old woman the offspring of blood relations, who, he incidentally states, had herself married a blood relation, and yet her children, in spite of this condition of affairs, showed no abnormalities and had good hearing.

The meatus was occluded by a plate of bone covered with skin at its outer end, in which, however, a slight depression existed at the upper and posterior angle, admitting a probe easily.

Her range for whispers was 10 cm., the lower tone limit the tuning-fork C, the upper tone limit hardly depreciated at all, whilst the function of the labyrinth is described as good. This latter condition he suggests is what is most usually found in these cases. The Eustachian tube was patent, as was evidenced by a normal sound on catheterisation.

An opportunity occurred of examining the case *post-mortem*, when it was found that the tympanic membrane was entirely absent.

After touching on the unfavourable prognosis in respect of operative attempts to remedy matters in cases of congenital atresia of the meatus, Herschel associates himself with Alexander's views to the effect that if any surgical interference is carried out it should be of the nature of a "radical operation," and he insists that a very accurate anatomical knowledge is absolutely essential to obtain a successful issue.

Alex. R. Tweedie

**Herschel, Karl.**—*A Case of Cholesteatoma which Healed Spontaneously* "Monats. für Ohrenheilk.," Year 43, vol. iii.

Both this account and the one following refer to two cases which the author showed at the meeting of the specialists in throat, nose, and ear diseases from the kingdom of Saxony held at Jena, October 4, 1908.

The cure in this case occurred owing to the cholesteatoma, which lay in the mastoid process, eroding the posterior wall of the meatus and thus working its way outwards. The patient was a man, aged forty, who had

had a purulent discharge from his right ear since childhood. Fifteen years ago he was treated by a specialist, who reported that he removed polypi and granulations and also some "white skin," which latter was washed out during irrigation. The radical operation was declined. Six years ago he had come under the care of the author, who made the following notes on his condition: He had never had any pain in the affected ear or headache. The tympanic membrane and ossicles were entirely lacking. A large opening was easily seen in the posterior wall of the meatus, through which one could explore a cavity the size of a small cherry in the mastoid process with a probe. This was filled with fœtid pus, which was syringed out together with a cholesteatoma, and the cavity, after an uneventful treatment, completely healed.

Herschel has been able to collect accounts of only seven similar cases, and would suggest as a reason that in these cases the destructive action of the cholesteatoma on the posterior wall of the meatus rather than in other directions, as is most common, is merely accidental. Such a sequence of events, however, corresponds with the object and method of the radical operation adopted by Stacke, and after drawing attention to the advantage of imitating Nature's efforts he concludes with the quotation: "*Naturam si sequemur duces, nunquam aberrabimus.*"

*Alex. R. Tweedie.*

**Bondy, Gustave.**—*The Origin of Tubercle of the Middle Ear.* "Monatschr. f. Ohrenheilk." Year 43, vol. i.

The author commences by stating that the middle ear may become the seat of tubercular processes by two routes—either by carriage of the infection along the Eustachian tube or by extension of the disease in the tissues forming its walls from the nose.

After a historical *resumé* of the work done, to determine the pathology of this condition, by such observers as Habermann, Barnick, and Gradenigo, an account is given in detail of a woman, aged thirty-four, with lupus of the point of the nose, who had had a discharge from the left ear for two years, which had not been preceded by any pain or earache. Her condition, both local and general, was such as to demand immediate operation, and the middle ear was freely exposed. Nothing abnormal was found in the posterior or middle cranial fosse, and the sinus was not involved, but the tympanic cavity was full of exuberant granulations, and two sequestra represented its roof and anterior wall. The patient never recovered consciousness, and died on the third day after the operation.

The *post-mortem* examination revealed extensive tuberculous lesions of the nose and naso-pharynx, especially towards the left side, a large sequestrum of the body of the sphenoid and several smaller pieces of necrosed bone in its left wing around the optic foramen and in the floor of the left anterior fossa of the skull. There was also tuberculous meningitis and the lungs were seriously invaded by the same disease as well.

In order to investigate more accurately the state of the ear and Eustachian tube a large portion of the base of the skull was removed and examined separately later. An exact report of the conditions then found is given, and the author concludes with a review of the case based on the *post-mortem* findings.

He considers that the lupus of the nose was doubtless the originating lesion whence the posterior portions of the nose, naso-pharynx, and accessory sinuses became infected, and subsequently, owing to the extension of the same destructive processes into the Eustachian tube, the

middle ear became exposed to and then involved in the same infection. He, however, omits to state by which of the routes mentioned at the commencement of the article he considers the disease reached the middle ear.

*Alce. R. Tweedie.*

**Herzfeld, J.** (Berlin).—*On the Tests as to the Functional Condition of the Vestibular Apparatus.* "Monatschr. f. Ohrenheilk.," Jahrg. xlii, Hft. 12.

The effect of lesions, the author remarks, and especially the results of investigations as to the condition of the vestibular apparatus are not so obviously easy to note that they can be at once recognised. This winter he visited a deaf-mute institution in this country during the bathing hour. No one has been able, he says, to note anything remarkable in the swimming movements of these people, although amongst them were those in whom no kind of nystagmus whatever could be produced and who were completely deaf. They could not, however, as many of them asserted, swim under water (as James also states), because then they lost all idea of their position and became giddy. For purposes of an accurate account of their conditions in this respect, one must first note the effect produced by the lesions and the results of examination, as Passow has maintained. They were therefore previously carefully observed and especial attention was directed to their static capabilities. Cases of labyrinth disease or of deaf-mutism without any labyrinth affection, in whom ordinary movements produce no irregular conditions, can often be at once diagnosed if made to stand on one foot or on tiptoe, as is well known. He passed over for the present the assistance which the sense of sight affords to the maintenance of equilibrium. In order to pay still greater attention to the static sense he had carried out these tests on a spring mattress of a bed. This test recommended itself strongly to him whilst he was examining forty-four deaf-mutes in a local institution, the result of which examination he proposes to describe in a special article. Not that he discovered during these procedures results which did not correspond with those published by v. Stein; but he came to the conclusion that by this means those results were more quickly and accurately obtained in doubtful cases. In the examination of cases by the old methods the necessity of repeating the test often arose, in order to make certain that the inability to stand on one leg or on a horizontal bar was not perhaps due to mere awkwardness. The swaying from side to side of those cases in which the labyrinth is absent is, however, so characteristic when they are stood on the mattress that it is at once recognised, and more especially if the patient is instructed to walk across the mattress or stand with the feet together. If the eyes are now closed as well they lose their balance. To the same end one can make use of large air- or water-beds, or rubber shoes the soles of which can be inflated with air. A spring mattress is, however, more simple, as in every clinic such an article can be found. In the consulting room the couch will answer the purpose if the springs are not too strong.

*Alce. R. Tweedie.*

**Freystadtl, Béla** (Budapest).—*A Contribution to the Subject of Caloric Nystagmus.* "Monats. für Ohrenheilk. und Laryngo-Rhino.," Year 43, vol. v.

In this article the author gives the results of his investigations on thirty cases—twenty of which had normal hearing and ten a chronic middle-ear discharge, whilst all had a normal vestibular apparatus—

with a view to establishing the effect of repeated irrigations on the production and duration of nystagmus and also to observe the influence of aspiration on caloric nystagmus.

The account is exhaustive and includes five tables of results.

He concludes that if an interval of a quarter to half an hour is allowed to elapse between the applications of the caloric test in the case of normal ears the time of onset of the nystagmus is not appreciably affected, but that its duration may sometimes be altered, being then, however, more often decreased than lengthened. In cases affected with chronic middle-ear disease the onset of nystagmus was retarded under the same circumstances, but the duration was unaffected. Aspiration immediately after the production of caloric nystagmus in normal cases had an undoubted influence in checking this effect thus elicited, and this result was even much more obvious in those cases suffering from a chronic middle-ear discharge. From this latter observation the author suggests it may be convenient at times to aspirate an ear if irrigation with cold water has brought on giddiness, as Politzer has already advised.

Qualitatively the account of his reactions corresponds with those of other observers, but in dealing with such a transitory phenomenon as nystagmus, so occasioned, it hardly seems justifiable to allow a difference of, say, five seconds, to constitute an alteration in response to the same test, and the correct inference as to the onset and duration of nystagmus has yet to be determined. However, Freystadt has based his investigations on a method which should provide a means of eliminating inaccuracy to a very great degree, and possibly affording a uniform basis of observation in respect of the duration of nystagmus. The patient was instructed to look towards the opposite side directly the irrigation of the ear was commenced until nystagmus appeared, when he was at once told to look straight forwards. Then as soon as the nystagmus commenced with the eyes in this position the irrigation was stopped and the patient again directed to look towards the opposite side. The interval which elapsed between the onset of nystagmus with the eyes directed towards the opposite side and its cessation when the same conditions were resumed was reckoned as the period of duration of the nystagmus. He ascribes the introduction of this method to Dr. Kiproff, of Professor Urbantschitsch's clinic. *Alex. R. Treedie.*

**Boot, G. W.**—*Non-Suppurative Involvement of the Labyrinth in the Course of Mumps.* "Journal of the American Medical Association," December 5, 1908.

The author reports two cases and analyses these with forty-nine others collected from the literature. As a result of his analysis (which is given in a very excellent table) it is shown that there are three distinct types, according as the cochlea, semi-circular canals, or whole labyrinth are affected. He is inclined to consider the trouble to be due to an acute infection by a non-pyogenic micro-organism, probably the streptococcus described by Bein, Michaelis, and Busquet, and that it reaches the labyrinth by the blood. The paper should be read in the original. *Macleod Yearsley.*



## MISCELLANEOUS.

Bartholomew, E. Urquhart. — *Two Notes on the Treatment of Syphilis by Argylarsonates*. "Lancet," February 27, 1909, p. 613.

Two cases, the second of which is the more interesting. Seven years after infection ulceration of the nose and cheeks appeared and resisted treatment by mercury and iodide of potassium. Orsudan, gr. x, was injected daily until one hundred grains had been given. Cure, rapid and complete.

Dan McKenzie.

## REVIEWS.

*Die Krankheiten der oberen Luftwege, aus der Praxis für die Praxis (Diseases of the Upper Air-Passages, from Practice for Practice).* By Prof. MORITZ SCHMIDT. Fourth edition, revised by Prof. EDMUND MEYER, with 180 figures in the text, one heliogravure and five plates. Berlin: Julius Springer, 1909.

For many years Prof. Moritz Schmidt's work on the diseases of the upper air-passages had been looked upon as an authoritative guide which has thoroughly exemplified its motto of its being "from practice for practice." The illness and lamented death of the author prevented him from having the gratification of bringing out a fourth edition, and of embodying in it the results of the extraordinary novelties introduced into medical practice since the publication of the previous one. He had time, however, to place in the hands of Prof. Dr. Edmund Meyer, of Berlin, the honourable task which he could no longer himself perform. Prof. Meyer has happily introduced into the book the results of recent investigations, and has added to it many fresh observations from the modern literature of the subject. The new edition has been carried out entirely on the same lines as the former ones, but the chapters have been subdivided in such a way as to make it more convenient both for reference and study. Among the newer points which receive consideration may be noted the sero-diagnosis and atoxyl treatment of syphilis, the opsonin tests and the conjunctival and cutaneous tuberculin reactions, and the radioscopic investigation of the nasal accessory sinuses, but there is scarcely a chapter in which some striking novelty has failed to be introduced. Sections have also been added dealing with the manifestations in the upper air-passages of foot and mouth disease, anthrax, cerebro-spinal meningitis, beri-beri, gonorrhoea, leukemia and pseudo-leukæmia. We have, in the literature of the last subject, met with the report of a case in which a leukæmic growth in the naso-pharynx was mistaken for simple adenoid vegetations and was operated upon as such with rapidly fatal result. This observation appears to have escaped Prof. Meyer's notice, but he states very definitely that above all things, wherever possible, operative interference is to be avoided. In spite of these additions to the matter the reviser has succeeded in making a considerable reduction in the number of pages in the volume.

We must congratulate Prof. Meyer upon the successful way in which he has infused his own personal views into the book while still reverently preserving in it all that was most characteristic of the illustrious practitioner by whom it was originally written. The names of authors are appended with great liberality to the statements quoted from their works,

but it would add enormously to the value of the book before us if, in addition to the names, there could be given the reference to the works themselves with sufficient minuteness to enable the reader to apply to them for further study of their views. This excellent custom has been followed by various other authors of text-books, and we trust that Prof. Meyer will do likewise in the next edition.

Meanwhile we know of no more complete, trustworthy, and up-to-date text-book on the subjects dealt with. *Dundas Grant.*

*Syphilis: Its Diagnosis, Prognosis, Prevention, and Treatment.* By THOMAS HUGH BEDDOES, M.B., B.C.Camb., F.R.C.S.Eng. London: Rebman, Ltd., 1909.

Laryngologists and otologists will welcome the publication of such a work as that of Dr. Beddoes on the diagnosis, prognosis, prevention, and treatment of syphilis. It contains in a comparatively small space an enormous amount of information upon the subject, and may be said to be almost exhaustive. Nothing is more instructive to the specialist than to read a work like this in which are taken into consideration the various aspects of the disease in question. He will find in it many suggestions for the confirmation or refutation of his diagnosis by the examination of other parts of the body than those in which he is specially interested. It would be scarcely fair to judge of the book by the description of the appearances of the diseases as it affects those parts with which the specialist is more particularly concerned, but even in this respect the work will stand all reasonable criticism. There are many very valuable hints in regard to treatment, and particularly the methods of administration of the various drugs employed, and it is refreshing to find a syphilologist who has still a good word to say for treatment by means of internal administration, as distinguished from the various forms of interstitial injections. Here and there a very useful aphorism is to be found, as, for instance: "A suspicious rash in a healthy infant is more likely to be non-syphilitic than is a doubtful rash in a healthy adult."

Here and there we find statements the phraseology of which, though perfectly clear to the writer, are somewhat obscure to the reader, but no doubt a second edition of the book will speedily be forthcoming, and on patient revision such slight obscurities will be detected and subsequently clarified. The description of the cutaneous lesions is particularly good, and will be found very helpful to the practitioner.

### BOOKS RECEIVED.

- Hart, A. Herbert, M.D. *How to Cut the Drug Bill.* London: John Bale, Sons, and Danielsson, Ltd. 1909.
- Downie, James Walker, M.B., F.F.P.S.G. *Clinical Manual for the Study of Diseases of the Throat.* (With 104 illustrations, many of them in colour.) Glasgow: James Maclehose and Sons. 1909.
- Barnett, H. Norman, F.R.C.S. *Accidental Injuries to Workmen with Reference to Workmen's Compensation Act, 1906, with article on Injuries to the Organs of Special Sense,* by CECIL E. SHAW, M.A., M.Ch., M.D., and *Legal Introduction* by THOMAS J. CAMPBELL, M.A., LL.B. London: Rebman, Ltd. 1909.

THE  
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**THE SIXTEENTH INTERNATIONAL MEDICAL CONGRESS  
AT BUDA-PEST.**

THIS interesting convention was held under the most favourable auspices and was in every respect quite successful. The charm of the locality and the warm-heartedness of the reception added greatly to the enjoyment of the meeting, while the richness of the scientific programme and the activity of the sections amply repaid the many who seriously endeavoured to combine the *utile* with the *dulce*.

The Rhino-Laryngological and the Otological Sections were among the most frequented, the latter having the added importance of being identified with the Eighth International Otological Congress. This identification was found to have its disadvantages, and it was decided that this Congress should never again be held at the same time and place as the General International Medical Congress. The next Otological Congress will therefore be held in 1911 at Boston, in the United States of America, and will without doubt be under the distinguished Presidentship of Dr. Clarence Blake, who is now the *doyen* of otology in America, and among the most senior and respected of living otologists. We feel sure that those who are wise enough to take the opportunity of crossing the Atlantic will derive, not merely much social enjoyment, but a great deal of valuable scientific information at the hands of our progressive English-speaking cousins across the sea.

Among the many distinguished members of the Otological

Congress were, notably, Professor Politzer and Professor Schwartz, while the sittings were under the chief control of Professor Böke, of Buda-Pest, and Professor Lichtenberg, aided by the active secretaries Dr. Erno Vali and Dr. Sigismund Szenes. A large programme was gone through, which included some important lantern and microscopic demonstrations. We intend in an early issue to publish an abstract report of the proceedings, but in the meantime may direct attention to an abstract of Professor Politzer's paper on "Labyrinthine Suppuration" (p. 542). One item of great interest was an investigation by one of the younger otologists as to the result of Wassermann's serum test for the detection of constitutional syphilis in a series of cases of ear disease of all kinds. Contrary to expectation it was negative in all the cases of oto-sclerosis.

An incident of great interest was the adjudication of the Lenval Prize, which was divided between Dr. Neumann of Vienna, and Dr. Albert Gray of Glasgow. The names and works of both are well known to our readers, but it is peculiarly gratifying to find that original investigation, though little encouraged in this country, has a representative among us whose claims to recognition and reward have been accepted by the international tribunal. We are sure that Dr. Albert Gray will still continue a work of which his fellow-countrymen are justly proud.

In the Rhino-Otological Section, presided over by the veteran Professor Navratil and managed mainly by the active secretary Dr. Donogany, work was plentiful and animated. Professor Onodi, who is so well known and so welcome among us, was naturally a guiding spirit both scientifically and socially, and the visitors to the section were indebted to him for the demonstration of his remarkable preparations illustrating the relationship of the optic nerve to the posterior nasal sinuses.

Sir Felix Semon's paper illustrating errors in the diagnosis of intra-laryngeal cancer is one of the most instructive monographs on the subject that has ever been published. In the abstract report which we hope to issue it will be seen that there is a tendency in the direction of conservatism in the treatment of extensive cancer, as also in that of suppuration in the accessory sinuses of the nose. Professor Hajek, of Vienna, emphasised the importance of this aspect of the question in a very lucid communication, in commenting on which Professor Killian stated forcibly, but temperately, the indications for operation.

It is regrettable that various circumstances seemed to have

interfered to prevent many British specialists from being present, as they were indeed poorly represented as far as numbers were concerned. Those who were there were highly gratified with their reception and with the charms of Buda-Pest.

### THE OTO-LARYNGOLOGICAL SECTION AT THE BELFAST MEETING OF THE BRITISH MEDICAL ASSOCIATION.

THE discussions in the section of Oto-laryngology at the recent meeting of the British Medical Association at Belfast proved of considerable interest.

That of the first day, on the treatment of tinnitus aurium, was introduced in a comprehensive paper by Dr. Barr, of Glasgow, and by Mr. Richard Lake, of London, the latter of whom dealt with the surgical aspect of the question in an able and stimulating address. The speakers in the subsequent discussion, in which the recent methods of treatment by fibrolysin and hot air were alluded to, included several well-known British otologists.

A joint meeting with the Section of Hygiene and Public Health on the second day afforded the members the opportunity of listening to an exhaustive handling of the difficult problem of the treatment of latent diphtheria by authorities such as Drs. Watson Williams (Bristol), R. M. Buchanan (Glasgow), and Duncan Forbes (Brighton). The gist of the introductory papers seemed to be, as one of the speakers in the discussion remarked, that when cultures are taken in a case of suspected diphtheria the nose should be investigated as well as the throat, and that when the Klebs-Loeffler bacillus is found to be present in a latent case, isolation should not be insisted upon unless inoculation of animals shows the organism to be virulent. The discussion was rendered noteworthy by an expression of opinion from Dr. Goodall (London) that too much importance had been placed in the immediate past upon the persistence of the bacillus in the throat or nose, after an attack of clinical diphtheria, as a factor in the spread of the disease in the community.

It was the third day's debate, however, upon the treatment of cicatricial stenosis of the larynx that aroused the keenest interest, for the presence as leaders of the discussion of prominent laryngologists from both hemispheres gave to the meeting the status of an international congress. Mr. Lambert Lack (London) drew attention to those forms of stenosis which are caused by faulty

tracheotomy, a portion of the field in which, as is well known, Mr. Lack has rendered valuable service to medicine. In M. Delsaux, of Brussels, was found an earnest advocate of the operative methods of M.M. Sargnon and Barlatier, which were published in the *JOURN. OF LARYNGOL., RHINOL., AND OTOL.* last year. There is a serious drawback to this operation, however, in the long-continued and often painful dressings necessary for perfect success. For this reason most laryngologists will doubtless prefer first of all to try the American plan, described by Drs. Bryson Delavan and Emil Mayer, of New York, of dilating these strictures with suitably modified intubation-tubes worn for prolonged periods. The successes which have attended this method indeed justify the hope that the treatment of cicatricial laryngeal stenosis, formerly "the reproach of laryngology," will soon be a reproach no longer.

Valuable papers were read by Mr. H. E. Jones (Liverpool), Mr. George Jackson (Plymouth), Dr. R. H. Scanes Spicer (London), Dr. Woods (Dublin), Dr. Dan McKenzie (London), and Dr. J. Hardie Neil (New Zealand), and the educative influence of the meeting was enhanced by the well-arranged demonstrations of Drs. Watson Williams, Bryson Delavan, and William Hill.

A special word of acknowledgment is due to the secretaries (Mr. Harold Barwell and Dr. Stoddart Barr), and to Dr. StClair Thomson, whose chairmanship, with its happy blend of geniality and firmness, went far to render the Belfast meeting harmonious, profitable, and altogether enjoyable.

## **SARCOMA OF THE NOSE, WITH REPORT OF CASES.<sup>1</sup>**

BY J. PRICE-BROWN,

Toronto.

FORTUNATELY for mankind sarcoma of the nose is a rare disease. Its malignancy has made it the dread of the surgeon as well as the patient. Medical treatment as a curative agent is acknowledged to be futile, and surgical treatment has been almost as unfortunate in its results.

To prove that this is the expression of modern thought I need only refer to the works of some of the leading writers of the day,

<sup>1</sup> Read in the Section upon Ophthalmology, Otology, and Laryngology of the Canadian Medical Association, held in Winnipeg, August, 1909.

men who are specialists, and, some of them, prominent teachers in the field of rhinology.

Lemox Browne in his most recent edition upon diseases of the nose and throat said that when the sarcoma affects the upper region of the nose no operation is advisable; when the lower region is affected, Ollier's or Rouge's may be attempted.

Bosworth, after quoting a large number of cases in which operation had been done, says that it would appear that one half the cases are cured, but that the statement is not trustworthy, as many of them were reported from one to four months after operation, while in others time was altogether ignored, rendering the statistics somewhat unreliable.

Boylan reports ten cures out of seventeen cases, but nearly all of them were reported within a few months of operation.

Shurly, Porter, and Bliss each report two cases, none of which recovered.

Kyle says that prognosis is always grave. Early and complete removal is the only hope, and the only instruments he advocates in purely nasal sarcoma are the galvano-cautery and curette.

Richards, in his article upon nasal sarcoma, says when it affects the ethmoid, the only region he refers to, "that we are positively helpless, and can only watch the fatal issue." He had four cases, two children and two adults; all died.

Bishop says it is a rapidly fatal disease of less than a year's duration.

Coakley, in his issue of 1908, says if the sarcoma is small it may be removed at one sitting by the electro-cautery snare, or if large by several distinct operations, the base being always cauterised. Prognosis, he says, should always be guarded, as recurrence, when least looked for, is likely to follow.

And lastly, Packard of Philadelphia, in his new text-book upon the nose, throat, and ear, only just published, says (I quote his own words): "The prognosis of sarcoma of the nose is extremely bad. If removed it has a strong tendency to early recurrence. The only satisfactory treatment is thorough extirpation of the neoplasm as early as possible. For this purpose it is generally necessary to perform an external operation, intra-nasal operations not affording sufficient room for thorough removal."

In the light of such a record from leading specialists of this new century it looks like temerity to say anything more. But the last word has not been said, nor will it be for many years to come; and I ask for a few minutes' earnest and candid consideration of

the other side of the shield. I will not burden you with a description of the pathology and symptoms of this disease. You all know them, but I will briefly outline my personal experience.

Six years ago I reported at the American Laryngological Association at Washington the history of three cases. All of them had exhibited the usual classical symptoms: continued obstructive growth, repeated hæmorrhages, etc. All had been previously operated on by other men. All had been of long standing, and the diagnosis was in each case sustained by pathologists after careful examination of sections removed. Two of them were then reported as cured, one as still under treatment.

To day all three men are perfectly well and are following their usual vocations as bread-winners for their families in the city of Toronto.

CASE 4.—In the December issue of *The Annals of Otology*, 1906, I reported my next case. The patient was a butcher, aged fifty-eight. His father died of cancer of the stomach at the age of seventy-two. On examination I found the left nasal passage from anterior to posterior naris filled with a dense growth which bled on being touched. Microscopical examination of a pathological specimen removed indicated that it was a round-celled sarcoma. The growth was from the outer wall, the middle and inferior turbinats being involved and softened. In two weeks the tumour was entirely removed by electro-cantery operations. At the end of that time the nasal passage was cleared of all obstruction and there was complete restoration of normal breathing through the nostril.

His temperature when he first presented himself was 99.4° F., and it continued more or less elevated throughout the treatment, running between 99° and 102° F. As the operations drew to a close septic symptoms developed. He lingered about two months and then succumbed to the absorption of toxins from the site of the tumour. There was, however, no return of the sarcoma, nor even of inflammatory vegetations, and both the patient and his friends were spared the horrible and repulsive deformity which usually attends death from this disease.

The following three cases were reported to the American Laryngological Association at Boston two months ago, two of them being still under treatment.

On April 1, 1909, Dr. Kerr, of Toronto, referred the first of these:



CASE 5.—Mr. C. C.—, aged thirty-five. General health and family history good. Bachelor, and weaver by trade. For several months closure of the left nasal passage had been developing, resulting in complete stenosis, even of the right side. Taste and smell had been lost, and the voice had a thick nasal twang.

*Examination.*—Left nasal passage packed with a red, fleshy growth which bled on being touched. The tumour was sessile, being attached to the triangular cartilage in front and the vomer behind. It did not project into the naso-pharynx. I removed a section by knife and submitted it to two pathologists. Their report was:

"The microscopical examination, together with the clinical history, incline us to believe that the growth is a small, round-celled sarcoma.

" (*Signed*) GEO. H. CARVETH,  
" L. A. DAVIS."

Electro-cautery operations were at once commenced and repeated almost daily for two weeks, the passage being freed from sloughs before each succeeding operation. By that time the tumour was fully removed, the posterior portion of the cartilaginous septum having been sacrificed to help to accomplish that end. The nasal passage was quite free, the breathing had become normal again, and the sense of smell had returned.

CASE 6.—On April 9, 1909, Mr. W. S.—, aged twenty, was referred by Dr. Nichol, of Cookstown. For more than two years he had suffered from a constantly increasing growth in the right nasal passage, with the loss of both taste and smell. Nine months ago, the stenosis having become complete, he was referred to a surgeon. From then until now, at different times, segments of the growth have been removed, each operation being attended by excessive hæmorrhage. As the tumour continued to increase in size he was finally brought to me by his family physician and placed in the Toronto Western Hospital for treatment.

I found complete occlusion of the right nasal passage extending low down into the naso-pharynx. The slightest touch caused bleeding, yet the hardness within the nasal passage was so dense that on first examination I thought it was partly due to a cartilaginous and bony ridge of the septum, which, after a free application of cocaine and adrenalin, I attempted to remove with a saw. But instead of cartilage and bone the instrument simply removed

a mass of tissue, pathological examination of which brought out the following report:

"We find that this is an angeio-sarcoma, composed of small round cells in a fibrous reticulum, having in it large and numerous blood-vessels with thin walls. Myxomatous degeneration is found in places.

"(*Signed*) L. A. DAVIS,

"GEO. H. CARVETH."

Two days later the tampons were removed and electro-cautery operations commenced. While under treatment an acute pericapsular abscess of the left ankle formed, which, after being operated upon on both sides, healed. This interrupted the electro-cautery operations, and they were suspended from April 15 to 29, when they were resumed. The rule was to cleanse the nasal cavity each morning, removing all loose sloughs, to anaesthetise it with cocaine and adrenalin, and then to canterise as much of the growth as was deemed advisable. This would be followed by an evening cleansing of the passage, the routine being carried out each day.

By May 18 the nasal passage was free right through to the posterior naris, and the post-nasal segment of the growth was freely incised with the cautery through the nose. On this day chloroform was administered, and a large portion of the balance of the tumour was removed through the mouth by means of a modified Löwenberg's forceps. The attachment was to the anterior part of the roof of the naso-pharynx to the septum and to the upper side of the soft palate.

From then until the latter part of June I used the electro-cautery at least a score of times, burning away fragments of the growth and thoroughly cauterising the base of the pedicle. These were all done by means of a strong light through the nasal passage. Once, also, I used the post-nasal curette. By this time the tumour was entirely removed. There were in all, besides saw, forceps and curette operations, forty-five applications of the electro-cautery knife. The spray used was one of simple albolene, and on going home the patient was instructed to continue to use it until the crust formation and catarrhal symptoms were over. He returned to his home in Muskoka two months ago, and my last letter received from him a few days ago states that he is quite well—the nose perfectly healed, respiration as free as it ever was in his life, and senses of taste and smell returned.

CASE 7.—On April 12, 1909, three days after receiving the last

case, Dr. W. M. Brown, of Neustadt, brought to me Mr. E. W——, aged eighteen, for treatment. This case was similar to, though in some respects more serious than the one just described. For several years the left nasal cavity had been filled with a similar growth extending into the naso-pharynx. In the latter it was much larger than in the case of Mr. S——. During the last two years he had undergone many operations by snare, forceps, and cautery, each one being attended by violent hæmorrhage.

*Examination.*—Breathing on either side impossible. Left passage filled by a growth which presented a red, globular form half an inch within the nostril. The right side narrow, and filled with pus. The post-pharynx was completely filled by a large globular mass.

The lad was placed in the Toronto Western Hospital.

The treatment was on similar lines to all those that had preceded it. In this case, however, there was no preliminary cutting away of a specimen for examination. This was deferred until later.

Daily cauterisations were at once commenced, the main object being to reduce the size of the tumour as safely and speedily as possible—*per vias naturales*. The attacks were made under cocaine and adrenalin upon the central part of the growth in the nostril, leaving the shrinking shell as a protection to the normal tissues. Consequently, although the sittings were long and tedious to the operator, they produced little pain in the patient. Little by little the heart was eaten out of the nasal portion of the tumour, and the naso-pharynx was reached. In the meantime I had discovered that the attachment was to the middle turbinal and upper end of the septum and adjoining naso-pharynx; and like the former case, there was also a wide adhesion to the soft palate.

On the thirtieth day of treatment chloroform was given, and the large body removed from the naso-pharynx with cutting forceps. Bleeding was so severe that post-nasal packing had to be done. Two days later this was removed. Then on examination I discovered a piece of the tumour still attached to the post-pharyngeal wall immediately behind the left posterior pillar. It had the appearance of a hard, misplaced uvula. Another segment was in the posterior part of the nasal cavity, and was attached to the middle turbinal, the posterior ethmoid cells, and the summit of the septum. These, together with many other spots, were removed by electro-cautery, the operative treatment being still necessary for several weeks.

On removal of the post-nasal portion of the tumour a pathological examination was made by Professor Anderson, of the University of Toronto, who gave the following report:

"I have examined the specimen of tissue from the nasopharynx and consider the condition to be that of myxo-sarcoma. The myxomatous tissue, forming a considerable part of the growth, is exceedingly vascular; the vessels as a rule have poorly developed walls. In different areas of the growth there are masses of small round cells. The condition I believe is one of sarcomatous transformation of a myxomatous tissue.

" (*Signed*) H. B. ANDERSON."

This case, like the preceding one, made an excellent recovery. The affected passage became perfectly free, every vestige of the growth that could be seen being removed; and he went home over two months ago to recuperate.

Two weeks ago, however, upon my request, his doctor examined him again. The boy was strong, heavier than ever in his life, felt perfectly well, and could breathe through his nose with the greatest freedom; but the examination proved that the growth was re-forming, and he was sent back at once to me for treatment.

I found the growth had already reached a large size, filling the upper and back part of the left nasal cavity, but not extending into the naso-pharynx. The attachment was to the vault and upper end of the posterior choana. It was richly supplied with blood and took successive electro-cautery operations for seven days to remove it. The lad now feels quite well, and in order to have him under regular observation and operative treatment, with the hope of completely eradicating all tendency to the return of the disease, I have secured a situation for him in a large manufactory in the city.

These seven cases were all private patients. They were all males, their ages being respectively eighteen, twenty, twenty, twenty-one, thirty-five, fifty and fifty-eight years.

In every case the disease was unilateral so far as the nose was concerned, but occupying the whole vault when involving the naso-pharynx. Two occurred on the right side, five on the left. Every case but one had been previously operated on before it was referred to me, and in every case the diagnosis was confirmed by microscopical examinations by skilled pathologists.

Three out of the seven have permanently recovered—that is, after intervals of fourteen, seven, and two and a half years there has been no return. The fourth died from toxæmic poisoning.

The fifth has had no return in four months, the sixth no return in two months, the seventh was followed by return in a few weeks, and is again under treatment—that is, out of the first six cases, there was a recovery of 83 per cent. and a death-rate of 17 per cent. Or if you consider the last three too soon to be reported upon, a recovery of 75 per cent. in the first four.

I present this paper as a report upon research work, not in pathology, but in operative treatment, in one of the most dangerous, most repulsive, and most baffling of diseases that a human being can be afflicted with; and in doing so I want to draw your attention to the fact that among the names of the scientific men that I have mentioned whose text-books are in our hands, those that speak most hopefully with regard to the treatment of this disease are the ones who advocate, above all other methods, the use of the electro-cautery knife or snare. But they speak on general principles, giving few, if any, records of cases.

While this fact is an encouraging note, I can claim without danger of contradiction that I am the first to evolve a systematic method of treatment, carrying it out through a long series of cases and a long series of years, with a uniformly successful result.

My own experience has emphasised the following points, some of which I have never seen mentioned.

(1) In sarcoma of the nose the usual site of origin is in the soft tissues and not in the bony framework which supports them.

(2) That the origin is in the form of a pedicle, which rapidly becomes sessile.

(3) That as the sarcomatous mass enlarges and presses upon the surrounding mucosa, abrasions take place, which are quickly transformed into adhesions; and these adhesions in time will become almost co-extensive with the disease itself.

(4) That these adhesions never attain the vitality and virile power possessed by the pedicle. Hence, when once thoroughly destroyed they do not form again.

(5) Recrudescence, however, frequently takes place in the region of the pedicle; and in view of this contingency this region should be kept under regular observation and control.

(6) When the nasal passage is filled with the sarcomatous growth any attempt to discover the site of adhesions will at once produce hæmorrhage. Hence, intra-nasal removal by the knife should not be attempted; but as gradual and systematic dissection out by the cautery knife, except in extreme cases, is

always available; it should not only be encouraged but should be insisted upon.

In closing, it may be as well to note that extensive granulation-tissue as well as tertiary syphilis may either of them be mistaken for sarcoma. But the answer in the cases I have reported would be: First, that the growths were larger and harder than those produced by granulation; and secondly that they were removed, and the patients cured by operative measures only, without resorting to specific treatment—something which it is impossible to accomplish in tertiary syphilis by surgery alone. Hence both these conditions must be ruled out of the question.

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## OTO-SCLEROSIS AND AUTO-INTOXICATION.

By DR. P. CORNET.

*Translated by* MACLEOD YEARSLEY, F.R.C.S.,  
Senior Surgeon to the Royal Ear Hospital.

IN his communication on *otitic migraine* made to the Seventh International Otological Congress, Escat sought to distinguish the part played by certain general conditions in the ætiology of oto-sclerosis.

He considered it as the consequence of a chronic toxæmia, and in basing his theory (1) on the frequency of migraine in oto-sclerotics, (2) on the auto-toxic and auto-infectious origin of migraine, (3) on experimental researches relative to the trophic innervation of the ear by the trigeminal, he defined oto-sclerosis as "the late anatomo-pathological substratum of a physio-pathological trouble, of which migraine would be the primordial symptomatic expression." From the point of view of pathological physiology, the auricular lesions resulted from functional disturbances of the bulbar centres of the trigeminal impregnated with toxic principles in circulation in the organism.

I returned to this question last January before the Paris Society of Laryngology, and I endeavoured to show that one can almost always demonstrate in oto-sclerotics the existence of an affection modifying in some way or other the normal function of nutrition.

In the last nineteen cases of oto-sclerosis among my patients I have been able to completely examine eighteen. Among these eighteen patients, eight were aged or arterio-sclerotic subjects or showed well the arterial hypertension premonitory of arterio-

sclerosis. There remain, therefore, ten patients suffering from true oto-sclerosis. Among these ten patients I have found in one case renal insufficiency, in one case renal insufficiency and ethylic dyspepsia, in one case hepatic insufficiency, in two cases atonic gastro-intestinal dyspepsia, in four cases various gastro-intestinal troubles with toxæmia shown by the increased amount of urinary sulpho-ethers, in one case successive pregnancies joined to a permanent gastro-intestinal toxæmia equally denoted by the increased amount of urinary sulpho-ethers.

Without granting it possible, being given the difficulties of experimenting in such matters, to scientifically settle the pathogenic part played by these various affections in the genesis of oto-sclerosis, at least the following fact remains true: In all the oto-sclerotics that I have recently studied I have proved the existence of various affections, all of which have this common character of entailing a chronic toxæmia and of determining sooner or later various organic alterations. The most frequent of these toxæmias is gastro-intestinal intoxication; but this corroborates the opinions of Escat, who, in his above-mentioned work, points out the extreme frequency of primary oto-sclerosis in all the subjects in whom the digestive canal or its adnexa contain numerous foci of auto-intoxication.

But whatever may be the pathological physiology of the affection, one does not see for what reasons the ear, one of the most delicate and vulnerable organs of the economy, should enjoy a kind of immunity in an organism impregnated with toxins, while the skin, the mucous membranes, the liver, the kidneys, or the nervous system are altered by degrees.

This hypothesis, however, accords with our actual knowledge of oto-sclerosis: *with the insidious nature of its onset* in young subjects, apparently in good health, for chronic toxæmias frequently remain latent, and to make them evident one must not be content with abstract questioning but proceed to a systematic and complete general examination; *with its frequently hereditary character*, for these toxæmias are transmitted by heredity, and nothing prevents the consideration that toxins attack an ear rendered more vulnerable from the fact of auricular attacks undergone by ancestors; *with its frequent appearance during a pregnancy*, being given the very special changes of nutrition which are produced in the pregnant woman.

Finally, this hypothesis accommodates itself to the facts of pathological anatomy. As Politzer has shown, oto-sclerosis is characterised specially by a spongy new formation in the labyrinth.

thine capsule; mucous changes are secondary. It may seem difficult to admit that an intoxication transforms a compact bone into spongy tissue. But we first note that this process of spongy transformation does not occur at the expense of the compact tissue itself, but, according to some authors, as Katz, at the expense of the periosteum, and according to others, as Siebenmann and Manasse, at the expense of the remnants of the primary cartilage of the capsule, which persist in numbers in this capsule throughout life. Consequently, the new formation is effected at the expense of a tissue susceptible of change. On the other hand, different affections of bony tissue are actually considered as disturbances of nutrition; such is the case in rickets, and the digestive troubles by which rachitic children are attacked appear to represent the starting-point of the osseous dystrophy. Dry arthritis, progressive deforming rheumatism, also admit in certain cases an auto-toxic origin; in young subjects the malady evolves on the occasion of an acute infection or of a slight intoxication of digestive origin, or is connected with thyroid insufficiency. It is not, therefore, irrational to consider that the characteristic osseous lesions of oto-sclerosis can result from an auto-intoxication. The frequency even of oto-sclerosis on the occasion of pregnancy strengthens this hypothesis; for in half the pregnant women a special modification of the cranial bones exists, which consists in the production of osteophytes formed of spongy tissue on the inner table of the cranial box. These osteophytes, the formation of which appears connected with the gravid toxæmia but which disappear with the pregnancy, can be, nevertheless, connected anatomically with the osteophytes which are formed in oto-sclerosis at the expense of the labyrinthine capsule.

## STUDIES ON LABYRINTHINE SUPPURATION.

BY PROFESSOR ADAM POLITZER.

(*Author's abstract of a communication read before the Eighth International Otological Congress, Budapest, 1909.*)

PROFESSOR POLITZER bases his statements upon a large number of accurately observed clinical cases in which he has had the opportunity of histologically examining the labyrinth *post mortem*.

Owing to the short time allotted for speaking, he limits himself to the description of two marked cases, and calls attention to the



future publication of the whole series in the *Archiv für Ohren- heilkunde*.

After describing two typical cases, and explaining them further by charcoal drawings and demonstration of histological specimens, he stated the following conclusions:

In those cases of labyrinth suppuration secondary to chronic middle-ear suppuration, the diagnosis of which can only be definitely made by the presence of, or history of, labyrinth symptoms, together with functional testing of the cochlea and vestibular apparatus, and the finding during the radical mastoid operation of a defect of the labyrinth capsule, the complete exposure of the suppurative area is indicated.

In the labyrinth one should *not* limit himself to removing the semi-circular canals and opening the vestibule. Professor Politzer lays much greater stress on the radical cleaning out of the cochlea, because most of his autopsies showed that the vast majority of labyrinthine meningitides came from the cochlea, while those developing from the semi-circular canals and vestibule (aqueductus vestibuli) were few in number.

There are cases in which the secondary suppurative labyrinthitis gets well without any intra-cranial complication, where merely a conservative expectant treatment has been used. However, if one considers the anatomical findings in the fatal cases, especially the frequent disease of the cochlea, and its breaking through into the internal auditory canal, then the indication for labyrinth operation (opening) becomes the more imperative, the more marked the diagnostic features of a diffuse suppurative labyrinthitis appear, together with total deafness of the diseased ear. Politzer chooses as a labyrinth operation, the one introduced into aural surgery at his clinic by Dr. H. Nernmann, which can be easily performed after practising it on the cadaver. By this method, while sparing the facial canal, the posterior wall of the pyramid is removed as far as the internal auditory meatus, the peripheral end of the nervus-acusticus, which is often infiltrated, is reached, without cutting through the dura mater covering the nerve. Only in cases in which there are symptoms of intra-cranial complications should it be exposed.

If when this operation is performed no deep-seated intra-cranial complication is present, the results of this procedure are more favourable than those of other operative methods.

In view of his pathological-anatomical findings in secondary labyrinth suppurations, Professor Politzer is in favour of radical procedure.

**A CASE OF ENTOTIC TINNITUS.**

BY H. BELL TAWSE, M.B. CH.B. ABERD., F.R.C.S. ENG.

THE patient, a healthy man, aged twenty-seven, was sent to me by Dr. Cole, of Nottingham, suffering from noises in the left ear, which he said were perceptible by his friends even when at a distance.

Seven weeks previously, while he was standing at the foot of a ladder, it fell backwards, hitting him across the bridge of the nose and causing considerable contusion, but no epistaxis. To this he attributed the noises, although they did not commence until a fortnight later, during which period he had "a cold in his head." As the cold improved a peculiar hissing noise was noticed by him in the left ear. It was quite a soft hiss to start with, but gradually became louder, till one day a friend called his attention to it.

The noise was synchronous with the heart-beat, was almost stopped by pressure on the left common carotid artery, and was diminished if the right common carotid was compressed. Pressure on the more superficial vessels had no effect. The noise was audible over a foot away, and was distinctly heard all over the cranium on auscultation. Even in the right ear one could readily detect it, though the patient had no tinnitus on that side. The noise disappeared occasionally. After washing with cold water it appeared to stop for half an hour. From half to one hour after meals it subsided to a gentle hum, but soon reached its maximum intensity again. It increased when he took alcohol.

He stated that he was not deaf, although the hearing in the right ear was impaired, and the drum membrane a little retracted. The left membrana tympani showed marked dilatation of the vessels, but the hearing was normal. Bone-conduction was good all over, and the tuning-fork on the vertex was better heard in the right ear.

The heart was normal, there was no evidence of aneurysm, no goitre, and no apparent dilatation of the vessels supplying the anricle.

I concluded the condition was due to a dilated condition of the arteries supplying the middle ear, but I was unable to find a cause for this. I gave a very guarded prognosis, and prescribed 7-grain doses of potassium iodide and 10-grain doses of potassium bromide, thrice daily, with an occasional saline purge. A week

later no change was apparent, and I arranged to show him at the next meeting of the Nottingham Medico-Chirurgical Society, but on the morning of the meeting—eleven days from the date I saw him—when he wakened he found the noises had gone, and they have never returned.

The case is interesting as regards aetiology, prognosis, and treatment. In some a distinct cause can be found, in most the prognosis is very bad, and in almost all operative treatment is unsuccessful.

Whether there was any connection between the injury to the nose and the tinnitus I am not prepared to say, and certainly intra-nasal examination revealed a normal condition of this structure. The sudden termination of the symptoms was another interesting and inexplicable feature.

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## ANNOTATION.

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### CAN DEAF-MUTES SWIM?

At the last Congress of French Otologists at Paris, in May of the present year, Messrs. Moure and Cauzard, summarising the work which has led up to the recent improvement in our methods of diagnosing labyrinth disease, quote an early American observer, James, as having said that it is “almost impossible” for deaf-mutes to swim. What that worker specially referred to, however, was the difficulty which certain deaf-mutes experience when they try to swim *under water*. This inability would seem to be a result of the absence or paralysis of the vestibular apparatus if the recent experiments of Thomas may be accepted as an explanation of the phenomenon. Having divided the vestibular nerves of dogs Thomas found that the animals were unable to maintain their equilibrium while in the water, whereas when the vestibular nerves were left intact and the cerebellum was destroyed they could support themselves with perfect ease.

The general question of the ability of deaf-mutes to swim seems to be settled by a letter on the subject, for which I am indebted to the kindness of Mr. John Brown, Headmaster to the Royal Institution for the Instruction of Deaf and Dumb Children at Edgbaston, Birmingham. He writes, under date July 1, 1909, as follows:

“(1) We teach all our deaf-mutes to swim, except those whom,

for health reasons, our medical officer has forbidden swimming lessons.

"(2) Our swimming instructor, who has taught swimming for forty years, says they learn quicker than normal children and sooner acquire a good stroke.

"(3) They swim perfectly well with closed eyes, but they cannot direct themselves by sound, and, of course, they cannot tell except by guessing when they are approaching the end of the bath.

"To test this I took about fifteen of our senior boys into the swimming-bath. The bath is about forty-eight feet long and seventeen or eighteen feet wide. I asked each boy to dive from the middle of one end of the bath and swim a length with his eyes tightly closed. All swam very well and the majority kept almost perfect direction. One boy came against the side about six feet from the far end of the bath."

The discrepancy between the older reports, that deaf-mutes experience some difficulty in swimming, and the testimony afforded us in the foregoing communication is probably more apparent than real. In a considerable proportion of deaf-mutes the tests show that the vestibular sense is active, and these persons in keeping their station, either under water or on the surface, would probably manifest no more deviation than normal individuals. With regard to that class of deaf-mutes, on the other hand, in whom the vestibular end-organs are totally inert, the ability to support themselves on or under water would probably depend upon the character and duration of the destructive lesion, and upon the presence or absence of an education of the compensatory methods of maintaining their equilibrium. Certain deaf-mutes find it difficult to walk in the dark or with bandaged eyes, and these we should expect to be individuals in whom the vestibular organs have been but recently destroyed, or who have neglected to train their sense of touch and pressure to replace the defective stimuli from the semi-circular canals.

The subject is mentioned also in an abstract of an article by Herzfeld, of Berlin, which appeared in the September issue of the *JOURN. OF LARYNGOL., RHINOL., AND OTOL.* (p. 525), and there can be no doubt that a fresh investigation of this interesting detail, carefully conducted with regard to controls, and under the guidance of the modern methods of interrogating vestibular activity, would prove serviceable in effectually dispelling the haze which seems to cling about the point.

DAN MCKENZIE.

**SOCIETIES' PROCEEDINGS.****BRITISH MEDICAL ASSOCIATION.**

*Annual Meeting, held at Belfast, on Wednesday, July 28, 1909.*

**SECTIONS OF HYGIENE AND OTO-LARYNGOLOGY.**

DR. L. C. PARKES, *President of the Section of Hygiene, in the Chair.*

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**DISCUSSION: LATENT INFECTIONS OF THE DIPHTHERIA BACILLUS,  
AND ADMINISTRATIVE MEASURES REQUIRED FOR DEALING WITH  
CONTACTS.**

Dr. WATSON WILLIAMS (Bristol), opening the discussion from the clinical standpoint, said that diphtheria might be defined as "latent" when there was present an infection of the specific diphtheria organisms without obvious illness. Further, the passive existence of diphtheria bacilli on the nasal or oral mucous membrane without any local reaction, though perhaps not a true infection, was nevertheless a form of latent diphtheria. Cases of latent diphtheria might be classified in three groups:

(1) Patients who afforded none of the usual clinical indications of diphtheria, were not definitely ill, and yet were found to be anæmic, to have increased pulse-frequency, and to be suffering from nasal catarrh, membranous rhinitis, redness of the fauces, slight subacute tonsillitis, otorrhœa, or sores, etc., which on bacteriological examination proved to be diphtheria.

(2) Cases with any of these diphtheric lesions but with no general symptoms of ill-health.

(3) Cases without local lesion or constitutional disturbance, in whom diphtheria bacilli were found by culture tests. In practice latent diphtheria was met with affecting the nasal cavities, the fauces and mouth, the external auditory meatus, the skin and the genital organs. There was no characteristic symptom or sign of latent diphtheria, for in their clinical aspects they were indistinguishable from similar non-diphtheritic lesions of the same territories.

Lesions of the mucous membrane of the upper air-tract, of which false membrane was a feature, might either be diphtheritic or non-diphtheritic, and the only crucial test by which the distinction between the two types of membranous trouble could be made out was the bacteriological test. Dr. Watson Williams

proceeded to adduce examples illustrating types of latent diphtheria from his own practice as well as from the literature on the subject. In the treatment of diphtheria-carriers in the effort to destroy the organisms much difficulty might be experienced. There was no doubt that the organisms in such cases, though incapable of causing severe illness in the host, were nevertheless liable, in some instances at least, to induce severe forms of active diphtheria in others. Consequently a sure means of getting rid of the bacilli was wanted. In many cases the frequent use of antitoxin coupled with the energetic local application of antiseptics sufficed, but in others these measures were of but temporary service.

The speaker further pointed out that before condemning a person as a diphtheria-carrier the question of the virulence of the suspected organisms should first of all be settled by recourse to guinea-pig inoculation.

Dr. R. M. BUCHANAN, continuing the introduction from the standpoint of bacteriology, said that in the classical work of Loeffler there could be found a foreshadowing of the difficulties now being discussed in the discovery by that early observer of the bacillus in the throat of a healthy child. Latent infection might be defined as the presence of an infective agent unaccompanied by any obvious pathological change. The speaker went on to discuss the type, virulence, and persistence of the diphtheria bacillus in clinically unaffected people.

*Type.*—A great variety in morphological character was the rule in cultures of diphtheria organisms taken from the throat. Cylindrical, curved, or cuneate bacilli, very irregular in size and staining, might be found.

Multiplicity in form was probably due to the influence of the artificial culture medium, and some types could be produced at will by varying the culture soil.

*Virulence.*—The virulence of the organisms in healthy contacts or carriers was slightly less than in those manifesting symptoms, the respective positive percentages (guinea-pig inoculation) being 66 per cent. to 74 per cent. Further, the *Bacillus diphtheriæ* was most tenacious of its virulence. Heating, drying, and prolonged cultivation caused but little reduction of its pathogenic properties. On the other hand, the virulence could be heightened experimentally. Thus the bacillus, when attenuated, seemed to be capable of recovering its virulence.

*Persistence.*—The period of residence in the throat was uninfluenced by age, sex, season, throat lesion, and even antitoxin. In

most convalescents the bacilli disappeared within six weeks, and there was no marked difference in this respect between healthy carriers and patients. A residuum of cases, varying from 1 to 10 per cent., retained the organism for longer periods.

*Contacts.*—The bacteriological examination of contacts in Glasgow during the last three years gave a positive result in a little over 9 per cent.

*Rarity of Return Cases.*—The experience in Glasgow was that the spread of diphtheria through the agency of patients discharged well from hospital was very limited—much less than in the case of scarlet fever. Thus the infecting power of a carrier appeared to be but slight, and carriers rarely developed the disease themselves; but it could not be denied that they did give rise to diphtheria in others. And the question of the segregation of contacts and carriers was therefore a matter of importance. Any hard and fast procedure which might raise difficulties in practice was not warranted from our present knowledge.

The problem had been dealt with in Glasgow as follows: "A bacteriological examination of contacts takes place in a family or institution—(a) when more than one clinical case occurs; (b) when in addition to the patient one or more persons give a recent history of having suffered from sore throat; (c) when the illness has been in progress for several days; and (d) when the patient dies at home." Positive contacts were isolated either at home or in hospital until three successive negative swabs were obtained in a period extending over a week.

Dr. DUNCAN FORBES dealt with the subject from the administrative standpoint. Continuing the question of the treatment of carriers, he indicated that in Brighton these individuals were generally isolated, and those who refused to take such precautions—usually school children—were rendered comparatively innocuous by being kept from school.

*Taking Swabs for Culture.*—In most cases swabs were taken from the throat only, but Graham Smith had shown that 1.9 per cent. of contacts among school children had the nose alone infected, the throat being free. For this reason swabs should be taken both from the throat and from the nose. The importance of nasal infection was obvious when we considered that the chances of transmitting to other people bacilli from the nose were much greater than from the tonsils. The speaker emphasised the importance of rubbing the swab well into the false membrane in, or mucous membrane of, the nose; otherwise a negative finding

might be obtained although the *Bacillus diphtheriæ* was present. Secretion should be wiped away before the swab was applied to the mucous surfaces, for the secretion was often devoid of bacilli. In the presence of diphtheria in others, cases of unilateral sore nose should be isolated at once without waiting for the results of culture.

The speaker then proceeded to detail the method of coping with the carriers of *Bacillus diphtheria* in the event of an outbreak of the disease—(1) in the ward of a children's hospital; (2) in a private house; (3) in a school. In the course of his remarks he observed that a diphtheria-carrier who had a sore throat was much more infectious than a healthy carrier, because of the presence of other virulent organisms, usually cocci, in the throat.

The practice of several towns in dealing with infective carriers was next described. In Brighton they were sent to the diphtheria wards or were isolated at home.

His opinions coincided with those of Dr. Buchanan, that true diphtheria bacillus carriers appeared to give rise to clinical cases but rarely. In this connection he quoted a letter from Dr. C. E. Ker, of Edinburgh, in which the statement occurred that return cases of diphtheria were practically unknown in that city during the period when no cultures were taken before the patients were discharged. Since the introduction of culture-taking several alleged "return" cases had occurred, but in every instance negative cultures had been obtained from the suspected discharged case.

Dr. Forbes brought his paper to a close by a discussion of the prophylactic injection of antitoxin, which, by masking the presence of highly infective individuals, tended to prolong an epidemic. The decision to give or to withhold such injections would be influenced by the special circumstances of each individual case.

Dr. CLARKE (Leeds) followed with a paper illustrating the results of examination of the throat and nose in suspected diphtheria. Local treatment was continued in his cases for from one to seven weeks, according to the virulence of the infection, and the patients were not declared to be well until after two negative bacteriological examinations.

MR. KNOWLES RENSHAW related a case which illustrated the importance of making a virulence test. An outbreak of diphtheria in a private school occurred, in the course of which the head-master took the disease. After his recovery Klebs-Loeffler bacilli were still present in his nose, but after some hesitation and deliberation he took the risk of re-opening his school. No further cases occurred. The speaker expressed the opinion that had the virulence test been adopted the individual would have been spared much anxiety.



Dr. DAN McKENZIE thought that the thanks of the Sections were due to the introducers for the very thorough manner in which they had dealt with the subject. So careful had been their work that all that remained was to emphasise what had struck him as being the most outstanding and important facts. These were—(1) that in taking swabs in a suspected case the nasal mucous membrane should always be investigated as well as that of the tonsils and pharynx; (2) that in the case of a carrier, whose occupation made it difficult to secure isolation, the virulence test should be resorted to before compelling the individual to make any sacrifices.

Dr. GOODALL (London) said that in former years there had been no bacteriology in London, and in spite of the want diphtheria had nevertheless diminished. What effect, then, had all these swabbings and bacteriological examinations had in checking the London epidemics? The number of return cases of diphtheria was small—so small that they were not worth talking about. Cases were cited, doubtless, of so-called "return" cases, but some of these must be accidental and owed their infection to a source other than discharged patients. With respect to the swabbing of convalescents, his view was that the cultivation test for freedom from infection did not matter at all. There was much discrepancy on the point among health officers. Some swabbed; others did not. The result was the same in both cases.

Dr. FORBES supported Dr. Goodall by citing his experience of diphtheria in scarlet fever wards. If a case of diphtheria got into a scarlet fever ward it was quite unnecessary to empty the ward. By keeping the patients in bed and avoiding fresh admissions no extension of the disease took place. Prophylactic antitoxin injections, moreover, had done no good.

Dr. H. JONES was interested to hear from Dr. Goodall that bacteriological examinations during convalescence were of so little importance. The pendulum seemed to be swinging away from the taking of swabs. In the event of an outbreak of diphtheria in a school, the school should be turned into an open-air school when possible, because the infection was a personal infection. In the playground there would be no need to keep the contacts away from their classes. No assistance had been afforded them in the matter of the treatment of contacts. Homes for their reception were impossible in many districts.

Dr. STCLAIR THOMSON had found the opening papers full of facts and suggestions. He agreed with Dr. Dan McKenzie in his summing up of the lessons to be derived from them, but there were some questions he wished to ask. What was to be done with carriers? Were they to be isolated or not? What had we to do by way of treatment of the carrier? Did Dr. Goodall condemn antitoxin injections as a preventative of infection?

Dr. GOODALL replied that they were of no use in preventing infection.

Dr. STCLAIR THOMSON wished to know also whether, in a case of fibrinous rhinitis, antitoxin would shorten the course of the disease and reduce the length of the infective period.

Dr. CLEMENTS asked what was the value of the morphological test in distinguishing the Klebs-Loeffler bacillus. In practice he ignored the Hoffmann bacillus; still, in some cases of virulent clinical diphtheria that bacillus was the only organism found. Was there any value in the antitoxic serum in shortening the period of infectivity? Many cases admitted as diphtheria to the isolation hospital were not diphtheria. To these he always gave antitoxin as a prophylactic, and none of them developed diphtheria. He had never seen harmful results from the use of the antitoxin.

MR. SCANES SPICER, in respect to the prophylactic treatment of the disease, always looked to the period antecedent to the outbreak of the disease. The tendency to develop the disease was increased in the presence of respiratory defects.

DR. WILLIAMS, speaking of the prophylactic treatment, said he never gave a prophylactic dose of antitoxin, and yet he had never seen diphtheria arise in hospital.

DR. ANDREW WYLIE asked Dr. Watson Williams whether he would operate on the throat, etc., in a case where the diphtheria bacillus was found?

DR. WATSON WILLIAMS replied that before operating he would endeavour to get rid of the bacillus; this failing, he would have recourse to the virulence test.

DR. MOWBRAY referred to the difficulty of diagnosing diphtheria in country places where no bacteriological examination could be obtained. He expressed the opinion that the modern interference with the course of an epidemic tended to prolong its existence. Diphtheria epidemics, he thought, were shorter in the old days.

THE CHAIRMAN (DR. L. C. PARKES) expressed the indebtedness of the members to the readers of the introductory papers. This was not a question upon which we could dogmatise because our knowledge was not sufficiently exact. The bacteriological examination of the nose was most important. He had been struck with the number of outbreaks which had been traced to nasal diphtheria, a form of the disease to which attention had been drawn as long as twenty-five years ago. In taking a swab from the nose the nasal passages should be cleansed of discharges before swabbing. Turning to the administrative aspect of the question, he held that it would be unjustifiable to admit contacts into a ward alongside of acute cases of diphtheria, because they also might develop the disease in a severe form. Under ordinary circumstances the provision of isolation wards or homes for contacts was unnecessary. Circumstances were altered, however, in the face of severe epidemics, because the disease was then more infectious than when it occurred in a sporadic form. At the present time the only isolation required for contact cases was to keep them at home.

DR. WATSON WILLIAMS, in reply, said that he would decline to send a contact case into a diphtheria ward, and cited, in support of his attitude, a case which Dr. Tilley had sent into a diphtheria ward and could not get out again. As long as such cases were kept in hospital they seemed to get re-infected from the cases around. Until lately adults suffering from diphtheria were retained in the general wards in the Royal Infirmary at Bristol without ever infecting the other patients, but this risk could not be run with safety when dealing with children. When epidemics broke out in public schools he had found that the contacts had to be isolated, otherwise the disease could not be brought under control, and a case overlooked might give rise to an uncontrollable epidemic. In the past Hoffmann's bacillus used to be looked upon as suspect in Bristol, but at the present day he always neglected this micro-organism, which, indeed, was often found in the nose of individuals who had never been near diphtheria. Regarding prophylaxis, he was in the habit of administering the antitoxin serum by the mouth given in peppermint water. One could thus eliminate one of the difficulties in the way of its general administration. The general opinion seemed to be that the culture test taken from the nose was of great value, and that the crucial test was the virulence test.

Dr. BUCHANAN, replying to Dr. Clements, said that the routine diagnosis of diphtheria rested upon the morphological characters of the microbe. For an absolute test the virulence of the organism had to be determined. No importance whatever was attributed to Hoffmann's bacillus. He warned the Sections, however, that the question of virulence should not be too dogmatically asserted, because every type of diphtheria bacillus would not be virulent. It depended to a great extent upon the culture medium.

Dr. P. WATSON WILLIAMS gave a demonstration upon the cadaver of a radical operation for fronto-ethmoidal sinus suppuration by osteoplastic flaps, and of the method of exploring the sphenoidal sinus without inspection.

Dr. BRYSON DELAVAN (New York) exhibited Hay's pharyngoscope, an instrument constructed upon the principle of the cystoscope, and of particular value in inspecting the naso-pharynx and larynx of debilitated or bed-ridden patients.

Dr. WILLIAM HILL showed an operating direct vision laryngoscope.

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## THE SOCIETY OF GERMAN LARYNGOLOGISTS.

*Communicated by* DR. J. BLUMENFELD, *Wiesbaden.*

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### THE AFTER-TREATMENT OF ACCESSORY SINUS OPERATIONS.

BY DR. A. HORN (Bonn).

As the result of experience gained from the successful after-treatment of twenty-four frontal and ethmoidal operations, most of which were carried out according to Killian's method, Horn recommends the principle of negative pressure in order to obtain complete and absolute drainage from the time of the removal of the plugs up to the entire healing of the case. He believes that this result can only be expected when (1) by previous operation all polypi and suppurative processes in other sinuses have been cured—the anterior ethmoidal cells are easily attacked through the bulla; (2) when the Killian operation is radically carried out so that no diseased ethmoidal cells or thickened frontal mucosa remains behind; (3) when by means of repeated suction action the region of operation is maintained free from secretion from beginning to end; the degree of negative pressure required varies with each case. According to Horn's view, suction has a retarding influence on the tendency of the drainage opening to

become smaller. Bad results are found in cases in which ozaena is associated with disease of the sinuses. In such cases the after-treatment drags on from week to week, and secretion is usually found on the floor of the nose. It is difficult to discover the origin of this secretion, but by powdering the nasal mucosa with aristol it is possible to say if the pus comes from the nasal mucous membrane itself or from one of the sinuses. The author considers that suction is of considerable advantage in the treatment of these diseases.

#### DEMONSTRATION OF NEW NASAL SPECULA.

By DR. A. SCHOENEMANN (Bern).

There are certain disadvantages in the Cramer or Killian speculum which should be corrected by an arrangement for locking by means of short handles on the left speculum blade. The use of the speculum is very simple, as follows: Introduction of the closed nasal blades; opening and fixing of these; further manipulation of the instrument, which remains open of its own accord during the operation by means of the two lateral handles. The instrument is made by Schärerer, Ltd., Bern.

#### FURTHER CONTRIBUTION TO THE PATHOLOGY AND TREATMENT OF OZENA.

By DR. SCHOENEMANN.

The speaker has formerly expressed the opinion that ozaena is a disease of the nasal mucosa absolutely comparable to eczema and its consequences. Further observations have proved that cases of ozaena by no means seldom suffer from eczema of the skin, though it is not possible to lay down a rule from the observation of only fifty cases. On the other hand, the internal, or better still the subcutaneous administration of arsenic in the largest possible doses seems without doubt to exert a favourable influence on the lasting improvement of the ozaena. Local treatment, however, cannot be omitted. The speaker had wrongly diagnosed as antrum suppuration two cases of ozaena. On freely opening through the canine fossa the diagnosis was seen to be incorrect, but from that time onwards the ozaena took on a decidedly milder character and tended towards cure. If such a wide opening of the maxillary sinus is successful in cases of genuine ozaena, *i. e.* ozaena not complicated by sinusitis, it is justifiable to begin the treatment of this disease by freely opening the antrum from the nose.

## SOME RARE CAUSES OF SUPPURATION IN THE MAXILLARY ANTRUM.

BY DR. WINCKLER (Bremen).

The speaker has observed destruction of the walls of the upper jaw due to relatively innocent affections of the antrum of Highmore within the last few years: (1) in a case of chronic dental empyema; (2) in a case of dental cyst; (3) in the case of cholesteatoma formation in the maxillary antrum.

CASE 1.—Male, aged nineteen, had suffered from a fistula between the two left incisor teeth in the upper jaw, which necessitated continued dental treatment. To the left of the raphé the mucous membrane of the palate hung into the mouth in the form of a sack. The left maxillary antrum was dark on illumination, while the right one was bright. Incision of the abscess of the palate did not cure the condition. On further examination an abscess cavity was discovered, in which the roots of both incisors as well as the inner side of the canine were exposed and surrounded by granulations. The incisors were extracted and the granulations curetted out. Above the abscess cavity the thickened mucosa of the antrum was visible; the bony plate of the palate was destroyed to beyond the middle line. The operation had to be stopped on account of trouble with the anaesthesia, but later on the thickened mucosa of the antrum was incised and muco-purulent fluid evacuated: the antrum was widely opened from the canine fossa and the mucous membrane removed over the site of the abscess cavity: the lateral wall of the nose was removed below the level of the inferior turbinal along with a piece of the bony floor of the nose: injury of the mucous membrane in this region was carefully avoided. The nasal mucosa was then cut close beneath the attachment of the inferior turbinal, and made into a flap and turned over so that it might unite with the periosteal covering of the destroyed palatal arch. The wound healed rapidly under careful attention.

CASE 2.—Boy, aged ten, had the anterior part of the right cheek bulged forward by a swelling the size of a child's fist. Puncture of the swelling yielded a reddish-yellow flocculent serous fluid which was free from bacteria, but showed microscopically red blood-corpuscles, cholesterol crystals, leucocytes, and epithelium. A wide incision was made over the swelling in the mouth, the periosteum was retracted upwards and downwards, and the enormously distended facial wall of the antrum was exposed up to the lower margin of the orbit, and extensively removed without

touching the fluctuating swelling which lay behind it. This large cystic swelling was firmly fixed to the antral floor in the region of the back teeth, but was easily separated from the mucous membrane of the antrum at other places and removed. The case was cured in three weeks, and remained well when seen one year later.

CASE 3.—Working man, aged twenty-eight, complained of suppuration from the right side of the nose, and of a painful (apparently periosteal) swelling above the right superior maxilla, which, according to the patient's statements, had developed within the last two days. Lacrimation on right side with congestion of bulbar and palpebral conjunctiva; swelling of lower eyelid; thick pus in the right nasal cavity. At the operation, which was carried out through the canine fossa, foul-smelling pus was found. After cleaning the cavity it was seen to be filled with white and somewhat shining masses, which formed a large tumour in the lateral angle of the antrum and behind the malar bone. Removal by means of the sharp spoon was specially difficult in the malar recess, so much so that the lower border of the malar bone had to be removed. No disease of a tooth root was found in the floor of the antrum. A wide opening was made in the lateral wall of the nose. No sign of recurrence up to the present time.

#### PHARYNGEAL ABSCESS OF ÆTIOLOGICAL INTEREST.

BY DR. MARX (Heidelberg).

The patient, male, aged sixty-eight, complained of pain behind the right ear for three weeks. A fistula, which discharged pus freely, was present about the middle of the mastoid process; the surrounding parts were reddened and somewhat infiltrated. No rough bone was felt on examination with the sound. In addition there was complete facial paralysis on the right side; tympanic membrane pale. At the operation an incision was made including the fistula, and the mastoid process and cells were found to be normal. The fistulous track led to a large cavity which lay to the median side of the styloid process; thick pus was found in this, and in addition two corn bristles embedded in granulation tissue: the contents were cleared out and cure resulted, though the facial paralysis continued. A later anamnesis revealed that the case was one of foreign body wandering from the pharynx outwards to the styloid process.

## ALCOHOL INJECTIONS INTO THE SUPERIOR LARYNGEAL NERVE.

BY DR. RUDOLF HOFFMANN (Munich).

Stimulated by the success of Schlösser in treating neuralgia by means of alcohol injections, Hoffman has used the method in cases of odynphagia due to laryngeal tuberculosis. Brann and Valentin had already used cocaine solutions in order to obtain temporary anaesthesia in operations of short duration. Method: the patient is placed on his back, and with the thumb of the operator's left hand the sound half of the larynx is pressed towards the middle line so that the cartilages on the diseased side are rendered prominent; the index finger is placed in the interval between the thyroid cartilage and hyoid bone and moved about until the patient indicates that the painful spot has been touched: the spot for entering the needle is marked on the carefully disinfected skin by the middle of the nail of the left index finger. Hoffmann pierces to a depth of  $1\frac{1}{2}$  cm. at right angles to the surface, and carefully moves about the point of the needle till the patient indicates that he feels pain in the ear. The alcohol (85 per cent.) is injected at  $45^{\circ}\text{C}$ ., and after the removal of the needle a collodion dressing is applied. No bad results have been observed, but it is necessary to use a special syringe (Schlössing's model). After the injection the patient can at once eat solid food without pain; Analgesia lasts from six to forty days. Hoffmann considers that the procedure can be strongly recommended.

Dr. AVELLIS stated that he had not been satisfied with the results of alcohol injection, and had therefore resected the superior laryngeal nerve on both sides—at an interval of nine days—in a case of very severe laryngeal tuberculosis with slight pulmonary affection; the operation was not difficult as the patient's neck was so thin that the artery was easily felt. Avellis further gave his experience of alcohol injections in cases of supra-orbital neuralgia, in which the final result was not always satisfactory and resection of the nerve had to be undertaken.

## ILLUSTRATIVE CASES OF PRIMARY TRACHEAL CARCINOMA.

BY DR. KAHLER (Vienna).

Two cases were reported, the first being that of a locksmith, aged sixty-one, who had in 1907 been tracheoscoped by v. Schrötter and operated on through a fenestrated tube which fixed

the swelling for the operation. The piece removed proved to be a cylindrical-cell carcinoma. Renewed dyspnoea brought the patient back to the clinic, and an uneven greyish-red tumour was discovered, apparently sessile and almost closing the lumen of the trachea. On touching it with forceps it was at once apparent that the tumour was not so broad-based as at first appeared, and it was therefore removed with the galvano-caustic snare; volsellum forceps were introduced at the same time to grasp the tumour and keep it from being aspirated into the bronchus; in this way a piece 2 cm. long, 1.5 cm. broad and 1 cm. thick was easily removed; hardly any hæmorrhage. Six days later another considerable piece was taken out and the remainder dealt with by means of Landgraf's double curette and the flat cautery-burner. Cure up to the present time.

CASE 2.—Labourer's wife, aged fifty-two, had a broad-based tumour removed in 1875 from the region of the fourth tracheal ring with the aid of illumination from the laryngeal mirror. The growth having recurred tracheal fissure was proposed as the high situation of the swelling favoured this procedure: the patient, however, refused. The first attempt to remove the sessile tumour by means of the snare was a failure and was followed by a severe suffocative attack. Eventually it was removed through the tube spatula, and the somewhat severe bleeding stopped by the cautery; the patient left the hospital in perfect condition. The histological character of the swelling was reported on.

#### RESEARCHES INTO THE POST-EMBRYONIC DEVELOPMENT OF THE ACCESSORY SINUSES OF THE NOSE.

By DR. FRERS (Hamburg).

After the great advance made by Killian in our knowledge of the embryonic development of the accessory sinuses, Frers thought that he should try to investigate their post-embryonic development, and look for an explanation of their origin: he found this in a purely physical factor, namely the variation in pressure in the nose, more especially by means of the expiratory pressure. The following points are in favour of his theory: (1) The circumstance that the chief growth of the accessory sinuses begins after coming into touch with the air-pressure and its variations; at birth only rudiments are present. (2) The observation that, according to the law of Nature, organs which have no function to perform shrink and degenerate. (3) The similarity of shape of the fully formed



sinuses to that of the hollow spaces created by inspiratory pressure, *e.g.* the pulmonary alveoli. (4) The direction of the inspiratory and expiratory currents and the post-natal anatomical conditions. (5) The nature of the lining membrane of the accessory sinuses support the same view. Clinical and pathological observations also favour the theory that variations in air-pressure can exercise an important influence on the formation of the accessory sinuses. These different points were further elaborated, but do not lend themselves to a short abstract.

Dr. SCHOENEMANN attributed the formation of the pneumatic accessory sinuses to the ingrowth of more or less solid epithelial buds into the depths, and their later differentiation into air-containing sacs. He thought that the development of the pneumatic facial sinuses was not to be regarded as different from that of the pnenmatisation of other bones, especially the petrous bone; in this latter case the direct result of respiratory pressure need not be considered.

Dr. KILLIAN pointed out that this difficult question could only be solved by original research and mastery of the literature of the subject. The development of animal and human body-forms was in the first place governed by the laws of phylogenesis and onto-genesis. The influence of air-pressure could hardly possess formative value: a large series of examples from the animal world showed that accessory sinuses existed in cases in which the influence of air-pressure could be excluded from the beginning.

(J. S. FRASER, Edinburgh, *trans.*)

(*To be continued.*)

## AUSTRIAN OTOLOGICAL SOCIETY.

*December 14, 1908; Monats. f. Ohren., year 43, vol. 1.*

PROFESSOR POLITZER *in the Chair.*

*Abstract of the Proceedings.*

ON THE QUESTION OF THE DIFFERENTIAL DIAGNOSIS BETWEEN CEREBELLAR ABSCESS AND SEROUS LABYRINTHITIS.

BY DR. E. RUTTEN.

(1) A butcher's apprentice, aged eighteen, first seen at the clinic on November 4, 1908. For the last eight years he had

had a discharge from the left ear off and on; history of pain and giddiness for three to four weeks.

*Present Condition.*—Total destruction of the left middle ear. Granulations, cholesteatoma. Conversation (Bárány's noise-apparatus) 1 m., whisper *ad concham*. Weber right, Rinne negative. Bone-conduction shortened, C1, C4 not heard. No spontaneous nystagmus. On inclining the head backwards nystagmus to the right. Fistula symptom positive, but reversed, that is, compression produced a marked horizontal nystagmus to the right, and aspiration a weaker nystagmus to the left. Typical caloric reaction. Temperature normal.

November 10.—As there was still some hearing left and the reaction was as described only a radical operation was performed. A large cholesteatoma was found in the antrum and a fistula in the horizontal semi-circular canal. The temperature rose to 38° F. in the next few days, with headache, strong nystagmus to the sound side, some rigidity of the neck and tenderness over the cervical vertebræ. On changing the dressings the ear was shown to be completely deaf and the caloric reaction was lost. On November 13 the labyrinth operation was undertaken. During the next six days the temperature fell, pulse about 100; the patient felt well; no more tenderness of the cervical region. Nystagmus to the sound side. On the seventh day a sudden attack of headache occurred, with slight nystagmus to the diseased side and vomiting; temperature normal, pulse 70. November 20: The patient was apathetic in the morning; obvious nystagmus to both sides. In the afternoon he had quite recovered and played cards. November 21: Pain at the back of the head; neck held stiff, but no rigidity of the neck; nystagmus of varying intensity to the left. November 22: Occipital headache, rigidity of the neck, apathy. Marked nystagmus to the left. Lumbar puncture, clear, pulse 68. Ruttin then made an incision into the cerebellum behind the posterior aspect of the petrous bone and opened an abscess the size of a plum situate in the left hemisphere. November 25: Death.

*Post-mortem* (by Prof. Stork).—Abscess of the left cerebellar hemisphere draining well and efficiently. (Edema of the adjacent brain tissue, hæmorrhagic encephalitis of the posterior part of the corpus callosum, flattening of the convolutions, no meningitis. *Streptococcus pyogenes* was found in the pus.

(2) *Cerebellar Abscess and Serous Labyrinthitis.*—A man, aged sixty-eight, was admitted to the clinic on October 15. Recurrent discharge from left ear for twenty years. Some swelling behind

the left ear for the last five months. Giddiness for the last fortnight, and vomiting with headache for the last twenty-four hours.

*Present Condition.*—Sagging of the posterior superior wall of the meatus; tympanic membrane injected and swollen; no perforation detected. Conversation (Bárány's noise apparatus) *ad eonch*. Whisper not heard. The middle tuning-forks not heard even when struck hard. Nystagmus varying; sometimes none observable, sometimes to the right, sometimes to the left, and then always rotatory. When the head was inclined backwards a rotatory nystagmus occurred to the left, when inclined to the left a rotatory nystagmus to the same side, when inclined to the right a rotatory nystagmus towards the right. Only a very slight suggestion of a fistula symptom. Caloric reaction very marked and of long duration. Temperature normal.

At an operation performed on October 20 a large extra-dural abscess was revealed around the sinns in the posterior fossa, but no fistula was detected, in spite of careful search with the help of adrenalin (tonogen). The next day the patient was quite comfortable, but on the 22nd a very obvious rotatory nystagmus occurred to the right whichever way the eyes were directed, and he lay on the right side. The dressings were changed, and the left ear was shown to be totally deaf with Bárány's noise apparatus. Weber to the left; C4 just heard. Reaction with hot normal saline solution elicited. Marked spontaneous giddiness. Vomiting when sat up. Little alteration in the condition took place till the 27th, when he suddenly became unconscious; some slight convulsive movements of the right hand and fingers; pupils contracted and did not react. No nystagmus, no deviation, temperature normal, pulse 120. Ocular fundus normal.

Ruttin then performed the labyrinth operation, and at the same time opened the cerebellum immediately behind the petrous bone, where he found an abscess containing thick, yellow, non-fetid pus. A counter-opening was made behind the sinus. Examination of the cavity revealed another smaller abscess further back in the cerebellum. About one hour after the operation the patient regained consciousness, and four hours later Ruttin made the following note: "Rotatory nystagmus to the right; pupils reacted sluggishly both to light and to accommodation. No involvement of the ocular muscles, corneal reflex brisk, speech husky, temperature normal. Patellar reflex lively, plantar reflex extensor, deep reflexes not elicited; ataxia of the left side, especially in the upper limb; epigastric and cremasteric reflexes easily obtained on

the right side but absent on the left, sensation normal; pulse 104." On the 29th the patient became unconscious. Eyes deviated to the left, slight nystagmus to the right, pupils contracted and did not react, temperature 40° F., pulse 104 and intermittent. On examination no pus was found in the abscess cavity. A cloudy fluid was drawn off under slight pressure by lumbar puncture. October 30: Death.

At the *post-mortem* examination the abscess appeared to be well drained, but there was some purulent meningitis, and *Streptococcus mucosus* was found both in the cerebro-spinal fluid and in the abscess cavity.

These two cases show how difficult the diagnosis of a cerebellar abscess may be if in addition to the abscess one is dealing with a fistula of the labyrinth or a serous labyrinthitis. According to Neumann and Bárány nystagmus directed towards the diseased side is a fairly reliable indication of a cerebellar abscess in cases where this condition is combined with diffuse purulent labyrinthitis. On the other hand we know that nystagmus directed towards the diseased side can be elicited in cases of labyrinth fistulæ or in serous labyrinthitis. This nystagmus is especially marked if the patient is sat up or during movements of the head, and in this respect it resembles nystagmus due to intra-cranial lesions, but it may also be produced if the caloric reaction is lost, as he (Ruttin) had shown at the previous meeting.

In the first case the nystagmus towards the diseased side which occurred on movements of the head before the operation might have been dependent either on the labyrinth or on the cerebellum, but the nystagmus which occurred spontaneously after the operation on the sixth day could only have been due to either an incipient meningitis or to a cerebellar abscess as the labyrinth had then been removed. The varying character of the nystagmus and also the clear fluid obtained on lumbar puncture, as well as the good general condition of the patient, all pointed to the presence of a cerebellar abscess, as, indeed, the operation had proved.

In the second case a typical serious labyrinthitis eventuated after the performance of the radical operation. Whilst, however, the symptoms of this labyrinthitis, especially the marked nystagmus directed towards the sound side, were diminishing, there appeared suddenly on the fifth day after the operation a nystagmus directed towards the diseased side. This nystagmus might of course have been dependent on the labyrinthitis still, but the fact that this

condition was already apparently subsiding aroused the suspicion of a cerebellar abscess, and the operation in this case, too, corroborated the correctness of that view.

Ruttin considered that we must still perform the labyrinth operation in cases where there is reason to suspect the presence of a cerebellar abscess, and that the labyrinth should be opened not only in cases of diffuse purulent labyrinthitis but also when there is a fistula or serous effusion of the labyrinth, and that this procedure is best carried out according to Nemmann's suggestion by opening the posterior fossa at the same time. That the hearing in these cases is almost always reduced to a minimum is all the more reason for this advice.

(3) *Cerebellar Abscess produced by an Unusual Mode of Infection, and Compression of the Fourth Ventricle.*—A child, aged five, was admitted to the clinic on November 11 in an apathetic condition. The parents stated that there had been an aural discharge for three weeks and that for four weeks he had been vomiting.

Present condition: A large perforation in the anterior inferior quadrant of the right membrane, at present dry. Caloric reaction prompt. Left ear normal. The child was unconscious. Neck stiff and the head bent backwards to its greatest extent. The child cried out from time to time. Feeding was only possible *per rectum*. Deviation of the eyes at first towards the right, later to the left; slight convulsive movements of the right extremities, some paresis of the right facial nerve. The unconsciousness gave way to a condition of apathy. (?) Some hyperalgesia of the right lower limb. Abdomen indrawn. Kernig's sign positive. Ocular fundi and other organs normal. A diagnosis was made of basal meningitis with involvement of the right Rolandic area or cerebellar abscess. The parents declined an operation, which was repeatedly recommended. The condition of the child did not change during its stay in hospital till the tenth day after its admission, when it died.

Autopsy: Abscess of the right cerebellar hemisphere the size of a plum immediately beneath the surface towards the base, with compression of the fourth ventricle and consequent internal hydrocephalus. Some purulent extra-dural inflammation around the right sigmoid sinus, but no thrombosis of the sinus itself. Further investigation showed that the pus had tracked between the two tables of the temporal bone from the mastoid process and thus infected the cerebellum. We know that the usual route for this to take place is *via* the labyrinth; this mode of infection in which the

labyrinth escapes is certainly more uncommon. The compression of the fourth ventricle, which was probably the immediate cause of death, is interesting.

(4) *An Otitic Cerebral Abscess in an Unusual Situation.*—A cook, aged thirty-three, admitted August the 4th, 1908. According to the account of his friends his condition during the last two days had varied between apathy and irritability. He had had a discharge for a long while from the right ear, on which an operation had at some time been performed.

Present condition: He is for the most part irresponsive, but answers questions though his replies are delayed; at times he speaks very brightly and spontaneously; yawns repeatedly and drops off to sleep. The left ear discharged a fœtid pus; it had been submitted to the complete post-aural operation. Right ear normal. Whisper heard, Weber to the left, C1 and C4 positive, Rinne not obtainable, caloric response prompt. Data as to the eye movements were difficult to ascertain, but when he spontaneously turned his eyes to the left a left-directed spontaneous nystagmus ensued. Right half of the head had evidently impaired sensation. Left epigastric and cremasteric reflex present. Pulse 60; ocular fundi, other organs and temperature normal. Lumbar puncture showed a clear fluid with no bacteria. A cerebral abscess was diagnosed, and the middle and posterior fossæ of the skull exposed freely. Some pachymeningitis was observed of the dura in the middle fossa, but no abscess was discovered in this situation nor in the cerebellum. The next day he was considerably improved, was quiet, and ate and drank with relish, and during the following five days he had periods of irritability varying with lucid intervals. Death occurred suddenly on the sixth day.

*Post-mortem* examination: Two abscesses about 3 cm. in diameter were found in the left cerebral hemisphere containing fœtid pus. Their walls were thick and a purulent lepto- and pachymeningitis obtained in their neighbourhood. Chronic tuberculosis of the left pulmonary apex with a small cavity. In the pus of the abscess were numerous long Gram-negative bacilli. The direction of the incision had been accurately planned, but had not been carried deep enough as the abscess was almost 8 cm. from the ear. The infection had been carried by the blood or lymph-currents, and was not the result of direct extension from the original seat of disease.

ALT, having remarked on the dangers attendant on the treatment of cerebellar abscesses during operation, quoted a case of his

own in which breathing ceased five minutes after the anaesthetic was commenced; artificial respiration was necessary for ten minutes. At the conclusion of the operation artificial respiration had again to be employed for three quarters of an hour, and a quarter of an hour later when the patient had been brought to the ward once more repeated, but he died in spite of the continued adoption of this method for two and three quarter hours. The *post-mortem* revealed a chronic hydrocephalus. Ruttin's case was interesting in that death did not take place till two days afterwards. He considered that more attention should be devoted to the brain-pressure in cases of cerebral abscesses, and that repeated lumbar puncture or puncture of the ventricles was of advantage in some instances.

NEUMANN was glad that the importance of a nystagmus directed to the diseased side in cerebellar abscess had been emphasised. He regarded the cause of death in these cases to be the increasing encephalitis and not the raised intra-cranial pressure, and did not agree with the suggestion that repeated punctures should be made, which might be a source of danger in certain cases.

RUTTIN replied.

#### SPECIMEN OF A HAIRY POLYPUS OF THE EAR.

BY E. URBANSCHITSCH.

Patient was a man, aged fifty, who reported that he had never been ill and had had no pain or discharge from the ear. A few days before he had noticed two spots of blood on the pillow and he had come merely to ask the reason. A cholesteatoma was found in the meatus and tympanic cavity, but no trace of pus. When this was removed a polypus was observed issuing from the inner wall of the antrum covered all over with fair hair. It was composed of granulation tissue and no papillae could be found, but the hair appeared to be, as it were, included in the substance of the polypus.

#### SOME CASES ILLUSTRATING A NEW SYMPTOM OF OTO-SCLEROSIS.

BY E. FRÖSCHELS.

The exhibitor maintained that the sensation of tickling, which one could easily elicit in normal ears, was absent or much reduced in cases of oto-sclerosis, and he showed as clinical evidence some patients in whom this symptom was present on the side thus affected and absent on the other, which as yet was not involved.

LEIDLER asked if the sensation of the whole side of the face had been tested, as he had found that patients suffering from oto-sclerosis could appreciate hot air at a temperature of  $60^{\circ}$  on the sound side, whilst it caused no sensation on the diseased side.

D. KAUFMANN, in remarking on the interest of this observation, suggested that Fröschels must be describing other cases than those usually included under the term "oto-sclerosis," as it was most unusual to meet with instances of this disease on one side only, and especially in old people, and he submitted that this test must be further investigated before its real worth could be ascertained.

RUTTIN did not think that Kaufmann's objection could be accepted, as both he and Bárány had been able to corroborate the presence of oto-sclerosis in many of Fröschels' cases. The symptom had been only shown in advanced cases; whether it also occurred as an early symptom yet remained to be proved.

FREY pointed out that perhaps the condition was functional, and reminded the meeting that these patients are largely of a neurasthenic disposition.

NEUMANN also thought that the symptom in question necessitated a longer test before its value could be determined.

FRÖSCHELS replied that he had only regarded this symptom as pathognomonic when he had found the sensibility to tickling differ on the two sides of the head, and when the defect in hearing was regarded as probably due to oto-sclerosis.

ALEX. R. TWEEDIE (*trans.*).

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## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

*Fifteenth Annual Meeting.*

DR. CHRISTIAN HOLMES (*Cincinnati*), *President, in the Chair.*

(*Continued from page 511.*)

INFECTIOUS AND INFLAMMATORY COMPLICATIONS AND SEQUELAE FOLLOWING INTRA-NASAL AND PHARYNGEAL OPERATIONS, AND HOW TO PREVENT THEM.

BY DR. WILLIAM L. BALLENGER (*Chicago*).

According to the author's observations nearly all the inflammatory complications and sequelae following intra-nasal and



pharyngeal operations have been due to one or more of three conditions, namely: (1) Failure to prepare the field of operation; (2) the use of intra-nasal tampons and dressings after operations; and (3) incomplete or ragged surgical technique. It follows as a natural deduction that in order to prevent such complications and sequelae the field of operation should be properly prepared—in other words, in accordance with the surgical principles which apply in other regions; that intra-nasal tampons should not be used except in extreme necessity; and that all intra-nasal surgery, especially of the ethmoid sinuses, should be thoroughly performed in a neat and surgeon-like manner. The complications and sequelae of intra-nasal and pharyngeal operations, which are usually infections and inflammations, may be limited to the nasal chambers, or they may extend to the pharynx, larynx, tonsils, middle ear, and mastoid cells. A frequent cause is the injudicious use of intra-nasal tampons and dressings. A tampon, in the author's opinion, should be used solely for the purpose of controlling severe hæmorrhage, and even then the gauze should be impregnated with powdered subnitrate of bismuth, or the compound tincture of benzoin, or some other chemical of equal value. A further frequent cause of infection is poor surgical technique in which the tissues are contused and torn, and the cells and middle turbinal body only partially removed.

Dr. J. A. STRUCKY agreed with the principles advocated by Dr. Ballenger. In 110 turbinectomies he had hæmorrhage in only three, and in none of these had he resorted to packing. Should hæmorrhage occur it could be checked by plugging the vestibule. He never packed the attic. In the 110 cases referred to he irrigated with saline solution at 110° to 115° F., after which he touched the parts with a 25 per cent. solution of argyrol. Nothing more was done. His patients were carried to bed, not allowed to walk. He was glad that Dr. Ballenger had emphasised the fact that these are hospital cases. These operations were not, strictly speaking, minor surgery, because of the close proximity of vital structures, and it was a reflection upon the rhinologist if they were performed in his consulting room and the patient allowed to go out to his home.

Dr. GEORGE L. RICHARDS defended the use of the nasal tampon. He had read a paper three years ago in which he advocated the use of a nasal tampon after removal of the middle turbinate, in which the following was employed:

R Bismuth subnit.

Thymol iodid. . . . . āā 3jss

Ung. zinc oxid.

Petrolati . . . . . āā 3j

This dressing prevented the sticking of any of the fibres of gauze or cotton, it had a certain elasticity, and the surfaces did not bleed when it was removed.

Dr. THOMAS CHEW WORTHINGTON was interested in the operation as described by Dr. Ballenger. There were many points about the operation which should appeal to the operator. He held that the operator who was not skilful enough to use the instruments should not operate at all. He found that his patients did better and had less reaction when a light dressing was applied to the middle meatus. The important point, however, was not so much the bleeding as the infection, against which nothing, to his knowledge, could insure one. He referred in this connection to the valuable work of Dr. S. J. Crow and Dr. Harvey Cushing, with urotropin. It had been found that in animals put on urotropin several days before and following operation it was much more difficult to produce meningitis, and even after withdrawal the cerebro-spinal fluid became infected to a much less extent when urotropin had been used. He had employed it in a number of cases and had thought the reaction less after operation on the fronto-ethmoidal cells than in those cases where it had not been used. He had not used it in a sufficient number of nasal accessory sinus cases to warrant definite conclusions, but the experiments indicated this to be a helpful field of investigation.

Dr. THOMAS J. HARRIS, in connection with the question of sterilisation, called attention to a paper recently presented by Dr. Frederick C. Cobb relative to the sterilising power of the nose. The author showed that the interior of the nose is sterile, and that the various statements to the effect that a variety of bacteria can be found in this locality are faulty, because the anterior naris is not properly treated before going into the interior of the nose. This emphasised the importance of working under proper conditions. During the past ten years he had abandoned the use of the tampon and his results had been better than before. This was properly a hospital operation. In connection with complications in the ear he cited two cases which had recently come under his observation. In one case the antrum of Highmore was opened under the most careful antiseptic precautions and a quantity of pus evacuated. This was followed immediately by infection of the

middle ear, necessitating operation finally on the mastoid. In the second case merely the posterior tip of the inferior turbinate was removed with the cold wire snare, under proper precautions, and this was followed immediately by serious infection of the middle ear. In each case there was a question as to the passage of the pus from the Eustachian tube to the middle ear. After the use of the cautery or the cold wire snare he had seen well-defined lacunar tonsillitis.

Dr. GEORGE F. KEIFER emphasised the importance of having the patient in as good physical condition as possible before operation, and called attention to the fact that in many instances subsequent complications were traceable to failure in this regard. He assumed the middle ground, so to speak, in the matter of tamponing the nose. The tendency of the patient to bleeding should be ascertained before operation, but in any event the individual should be kept under observation for an hour or two afterwards. The use of gelatin had been helpful in these cases. He insisted also, in addition to the last point mentioned by Dr. Ballenger, that wounds in the nose be left alone as far as possible because they are healing under an aseptic blood-clot. Meddlesomeness in after-treatment was to be deprecated.

Dr. CHARLES W. RICHARDSON called attention to the fact that several years ago he first presented the subject of non-tamponing in all operations in the nasal chamber. Since that time he had not tamponed the nasal chamber for the purpose of preventing hæmorrhage at the time of operation. Under some conditions everyone resorts to tamponing, as, for example, in the submucous operation, when the tampon is used, not to prevent hæmorrhage, but to bring the flaps into position and to prevent hæmatoma. The tampon is also used in the antral operation, but not for the purpose of controlling hæmorrhage. Hæmorrhage was a factor which might or might not play a part in any operation in the nasal chambers. The more perfect the operation the less the likelihood of subsequent hæmorrhage. If tags of mucosa be left or if the vessels be irregularly cut hæmorrhage is apt to occur. The only method which he had employed for the past four or five years for the purpose of preventing hæmorrhage was to go over the wound surfaces with collodion dressing. With the exception of one case, where secondary hæmorrhage followed the submucous operation, he had not been called upon to control secondary bleeding. He had had very few tonsillar infections and an occasional infection of the ear. He had observed that those cases in which there was

secondary infection of the ears were the ones which bled most at the time of operation or subsequently.

Dr. STEPHEN H. LUTZ advocated giving the patient calcium chloride for forty-eight hours. A clean operation, with as few strokes as possible, should then be done, with no packing. The patient should be instructed as to the proper manner of blowing the nose. He believed that the greater number of cases of infection of the ear and accessory sinuses were due to the ignorance concerning this seemingly insignificant point. If hæmorrhage should occur packing should be employed, a piece of Cargile membrane being first placed over the wound surface.

Professor CHIARI agreed with Dr. Ballenger that in many cases no plugging was needed. There was a difference in cases, however, and the method of procedure should be dependent upon the individual case. When the nose was clean, without preliminary infection, one could operate and care for the patient in whatever manner might be desired. In any case it was better to operate in a hospital in order that the patient might be under observation until the danger of hæmorrhage had passed. He had never seen profuse hemorrhage in operations upon the middle turbinal bone, but when the inferior turbinal was cut there was apt to be much bleeding. In the latter cases he always used the tampon, leaving it in the nose for three days. When removed after twenty-four or forty-eight hours profuse hæmorrhage nearly always followed. Where the middle turbinated bone in a clean nose had been removed hemorrhage was very rare. There might in such cases be infection of the tonsil.

Dr. CHARLES GRAEF did not agree with Dr. Goldstein's statement that there is no difference between the operative field in the nose and elsewhere; on the contrary he considered the difference very great. When the nose was packed there resulted swelling, similar to that noted in the orbit. He had followed the routine laid down by Professor Chiari. He could not recall a case where he had found it necessary to pack the middle turbinal. He always put in a Bernay's sponge when removing the lower turbinate, leaving it in for forty-eight hours. He generally used Cargile membrane also. Peroxide of hydrogen, 1 to 4, dropped in with a medicine dropper, exerted a styptic effect.

Dr. HOLMES concurred in the position taken by Dr. Ballenger and Professor Chiari. He had a record of four thousand intranasal operations, the subsequent history of which was followed. In the early years of his practice he packed the nose after opera-

tion and sent the patient home; after a little he took them to the hospital, and now he demanded that not only shall they go into the hospital, but that they go in the day before, have a cathartic, and be otherwise treated just as if they were to be given an anæsthetic. It was but just to the patient that if the operation was sufficiently grave to jeopardise life it should not be regarded as lightly as was so often the case. His patients walked to bed, were put on moderately light diet, and were kept under these conditions for three or four days. As a rule, sterile noses need no operation, the necessity for which is due to a pathological condition of the mucous membrane, and for that reason, perhaps, one seldom had to deal with sterile noses.

Dr. NOEVAL H. PIERCE explained the method of testing the coagulability of the blood previous to intra-nasal operations, or whenever this information is desired. A drop of the blood to be tested is placed upon a cover-glass or slide, and, with a paracentesis needle or scalpel, lines are drawn through it for about half a minute. Under normal conditions, after half a minute or so it would be found that the coagulum passes beyond the circumference of the drop. Where the blood is incompletely coagulable it would be five minutes before the coagulum would follow the point of the knife or needle.

Dr. BALLENGER, in closing the discussion, reiterated the fact that in his experience very few patients bleed sufficiently to require the use of the tampon. He agreed with Dr. Richards that when a tampon is used it should be prepared, either the bismuth gauze or gauze dipped in compound tincture of benzoin. Irrigation before and immediately after operation, as suggested by Dr. Stucky, was important. Dr. Worthington's suggestion with reference to urotropin was new to him, but he would investigate it in future. Dr. Lutz had referred the occurrence of mastoiditis, tonsillitis, etc., after these operations to an incorrect method of blowing the nose. This should be done gently, only one side being compressed at a time in order that there may be free projection of the secretion. The preparation of the patient was very important. There were so many bleeders, not necessarily hæmophilics, that it was wise to make a test of the coagulability of the blood as described by Dr. Pierce. He had used the collodion dressing, the ideal dressing for certain intra nasal wounds, which could be left on until it sloughs off several days later.

## INTRA-NASAL FRONTAL SINUS OPERATION: THE ACCESSIBILITY OF THE SINUS AND THE PROGNOSIS OF THE OPERATION.

BY DR. THOMAS CHEW WORTHINGTON.

The radical intra-nasal operation for disease of the frontal sinus renders the external operation unnecessary in a large number of cases. It is preferable, first, because of the ease and safety with which the diseased sinus can be entered and drained through the nose. Secondly, because the operation under cocaine and adrenalin has the advantage of being almost without pain or bleeding. Thirdly, because the results compare favourably with the external operation without its resulting deformity. Fourthly, because the external operation can always be done where the intra-nasal operation has failed, or if urgency demands.

Suppuration or obstruction of the frontal sinus is always accompanied by disease of the ethmoidal cells, which increases the ease with which the entrance into the frontal sinus is accomplished.

The operation and the instruments used were described by the author in detail, and a series of fifty-nine cases was presented.

He held that the vast majority of cases of frontal sinusitis can be treated and relieved by the intra-nasal operation; that the cure is usually complete and satisfactory; that the danger of the operation is no greater than when the external operation is done.

Dr. B. R. SHURLY emphasised the importance of X-ray examination in cases of sinus disease. He cited a case of caries of the bone of the frontal sinus, with no intra-nasal symptoms whatever, except terrific pain, in which the diagnosis was made by means of X ray. Any other method of diagnosis would have failed. This class of case required external operation. The intra-nasal route was certainly the ideal method wherever possible.

Dr. WILLIAM L. BALLENGER said his experience covered this field rather widely, though he had not followed the method of operating suggested by the author of the paper. He was familiar with Dr. Good's method and had seen him operate, but he did not believe the procedure necessary. Dr. Ingals had reported by his method 95 per cent. of cures in cases in which the floor of the frontal sinus was opened. The speaker did not believe it necessary to remove the floor of the frontal sinus. He had had no deaths in over one hundred cases operated upon by his method of

exenteration of the ethmoidal cells with the middle turbinal *en masse*. As a rule the obstruction was at the mouth of the infundibulum. He recommended ethmoid exenteration rather than the removal of the floor of the frontal sinus. Referring to the question of skiagraphy, he said it would not show whether the case is suppurative or catarrhal, nor would it show whether the bone was denuded of mucous membrane. Other clinical data must be considered in deciding the question of operation. The skiagraph determines the size, outline, and subdivisions of the frontal sinus.

Dr. WORTHINGTON, in closing the discussion, said he had operated upon several hundred of these cases, and in his early experience he had had to operate the second time in so many instances that he felt that these operations were not sufficiently extensive unless the frontal sinus had been opened. He had found the X-rays a great aid in enabling him to determine the location and extent of the sinus disease. The danger was not in entering the frontal sinus, but in the ethmoidal operation. The operation was safe, and he entered the sinus if there was any indication whatsoever for doing so.

#### THE PRESENT STATUS OF THE SURGICAL TREATMENT OF CHRONIC PURULENT DISEASE OF THE NASAL AND OF THE AURAL CELLULAR SPACES: A COMPARISON.

BY DR. ANDREW J. N. REIK.

The author made a comparison of the anatomical and histological structures of the mastoid and nasal accessory sinuses. A parallel was drawn between the affections of the two regions, their normal physiological and abnormal pathological processes being considered. The development of ear surgery in relation to suppurative otitis media was reviewed, and a comparison made between the situation in the ear with that in the nose. The application of similar rules of treatment to nasal diseases was advocated.

Dr. HOLMES said there had been a tendency of late to too great conservatism, but incomplete operations were not good surgery, and when intra-nasal work was attempted it should be done thoroughly, not partially. Even with the radical Killian operation the most beautiful results could be obtained with very little deformity, providing the bridge be made even wider than recommended by Killian.

INTESTINAL AUTO-INTOXICATION AS A FACTOR IN THE CAUSATION OF  
PATHOLOGICAL CONDITIONS OF THE EAR, NOSE, AND THROAT.

BY DR. J. A. STUCKY.

Further observations, confirmed by clinical and laboratory data, substantiate the views already expressed by the author as to the cause of lithæmic naso-pharyngeal troubles. In several hundred cases of diseases of the nasal accessory sinuses, middle and internal ear, in which surgical interference was not indicated, and in all in which it was indicated and operative procedure resorted to the author has found unmistakable and marked evidence of toxæmia of intestinal origin, as shown by excessive quantity of indican in the urine, and by the fact that when the condition causing this was removed there was decided amelioration or entire relief of the disease. The condition known as lithæmia sometimes brings about contraction of the circulation, resulting in hyperæmia or ischæmia with venous stasis. Quinine and salicylates cause tinnitus, probably by producing hyperæmia of the labyrinth, as they increase the blood-pressure until actual toxic effects are manifested, when the pressure is reduced. The same conditions result from imperfect or over-nutrition and defective elimination. Prolonged interference with function due to toxæmia, etc., may result in organic changes. Foods and drugs once in the circulation select the nervous function which they specifically derange. Lithæmic and uræmic poisons must accumulate a long time before their effects become manifest. More attention should be given to radical systemic treatment and hygienic living in the management of pathological conditions of the ear, nose, and throat.

Dr. CHARLES N. COX said there was another side to this question, namely, the effect that diseases of the nose and throat may have upon the production of intestinal putrefaction. In chronic nasal catarrh, atrophic rhinitis, sinusitis, adenoids, and chronic inflammation of the tonsillar crypts, there occurred during sleep, when the stomach was empty and contained no hydrochloric acid, a constant deglutition of purulent material impregnated with more or less virulent bacteria. This continual source of infection was certainly deserving of recognition, as it was undoubtedly the key to many therapeutic failures, and furnished a valuable indication for treatment preliminary to that of the intestinal tract.

Dr. B. R. SHELLEY had found calomel of value in the management of many of these cases.



Dr. CHARLES F. MCGAHAN said that a wholesome mixed diet, thorough mastication, and rest before eating were important items in the management of these cases.

Dr. STUCKY, in closing the discussion, said he proposed to present one more paper on this subject, in which he would give the results of more than one thousand examinations of urine, and a large number of examinations of faeces in various conditions.

#### NEW FACTS IN THE PHYSIOLOGY OF HEARING.

BY PROFESSOR E. W. SCRIPTURE.

One method of studying the physiology of hearing consists in finding the sensations aroused by different forms of physical vibrations and the vibrations that correspond to the various sensations. The first problem was to find the most accurate method of recording the sound-waves. This was accomplished by means of a gramophone. A record was obtained on a gramophone disc. The sound-record on a gramophone disc consists of a groove of even depth with sidewise deviations which correspond to the vibrations of the air. The disc was placed on a special apparatus and turned very slowly. The steel point of a long, light lever rested in the sound groove just as the steel point of the reproducer does. The deviations in the groove made the lever move backwards and forwards, and a fine point at the end of the lever recorded the vibrations on a long band of smoked paper. There was thus presented to the eye a permanent record of the original sound vibrations, which could be studied at leisure.

Various curves, obtained in the above manner, were thrown upon the screen and analysed by the speaker. Such curves constantly reveal facts that the ear does not notice. Often the ear learns to hear the peculiarity of a sound after the eye has called attention to it. What the mind has not been trained to perceive it often neglects to hear. Few suspect that there is a melody of speech that is far more complicated and more highly developed than the melody of song. From the speech-tracings it is possible to study the speech melody with the utmost accuracy, and to become familiar with the factors of speech whereby certain emotions are aroused in the mind of the hearer. It is by the sense of hearing that one knows how the voice rises and falls in pitch. For other people's voices this sense is very accurate, but for one's own voice it is very defective. An arrangement was presented for indicating to the eye when the singer sings off

pitch. The fundamental principle of appeal to the eye in order to train the ear to correct the faults of the voice could be used in the most varied ways to correct every defect of speech. Many devices had been developed for the purpose.

THE PHENOMENA OF VESTIBULAR IRRITATION IN ACUTE LABYRINTHINE DISEASE, WITH SPECIAL REFERENCE TO THE STUDIES OF DR. BÁRÁNY (OF VIENNA).

BY DR. P. D. KERRISON (New York City).

The rotation or turning experiment was described, and rotation nystagmus explained in accordance with Ewald's experiments. The rotation experiment is particularly instructive, since it enables one to induce at will different forms of nystagmus, and to study the accompanying variations of vertigo and ataxia.

The technique and significance of the caloric reactions, first established by Bárány, were described, and the following deductions drawn: (1) If irrigation of the diseased ear is followed by normal reactions, it may be assumed that the labyrinth has been the seat of a comparatively mild lesion which has undergone resolution, leaving the vestibular structures intact, and the prognosis is good. (2) If, on the other hand, after irrigation with heat or cold, persisted in from three to five minutes, no caloric reactions are induced, it may be concluded that the labyrinth is the seat of a suppurative process which has either destroyed the vestibular structures, or, at least, has resulted in injury sufficiently severe to annul vestibular function. This condition describes the so-called latent stage of suppuration, in which the ultimate prognosis is grave. Bárány's theories were contrasted with those of von Stein.

DR. WILLIAM L. BALLENGER, referring to the caloric test, said it should be remembered that the side of greatest physiological irritability of the hair-cells of the ampulla of the anterior vertical canal was opposite to that in the horizontal canal, namely, on the side towards the utricle or vestibule. It was apparent, therefore, that in the warm caloric test the fluid rising struck the hair-cells of the anterior vertical canal on the side of greatest physiological irritability and produced rotatory nystagmus. If cold water was used the fluid of the anterior vertical canal passed downward toward the utricle, producing a weaker rotatory nystagmus as the irritation was upon the side of the least physiological irritability. The fluid at the same time flowed from the utricle

to the ampulla of the horizontal canal, and caused horizontal nystagmus, hence there arose combined rotatory and horizontal nystagmus.

Dr. GEORGE F. COTT said that if a patient stood with his feet together and endeavoured to walk straight ahead with the eyes closed he would walk at an angle towards the side of the disease. The semi-circular canals were about the size of a pin, and the ampullae about the size of a pin-head, and it was claimed by English otologists that it was a physical impossibility for the fluid to flow when the patient was rotated. As a matter of fact, for all practical purposes the fluid did flow. If the reflexes were abolished one did not get the reaction at the end of two or three minutes. In the caloric test if water was forced in upon the drum-head then the test might be painful. In acute cases of perilyabyrinthitis there was quick movement of the eyes to both sides. If twenty, thirty, or forty rotations were used one was liable to get after-nystagmus followed by late after-nystagmus. A difference should be made between infective and serous labyrinthitis. In acute labyrinthitis, whether infective or serous, hearing was destroyed, except that in the serous variety perception of high notes was retained. This was always recovered from in a week or ten days.

Dr. EDWARD B. DENCH was glad Dr. Cott had brought up the question of deviation to the affected side, which the speaker had noted in a number of cases of mild infection of the labyrinth. In the early stages of the disease there was nystagmus to the same side; later, however, it was to the opposite side. He agreed with Dr. Kerrison that the balancing tests were unreliable. He did not agree with Dr. Cott with reference to the method of making a differential diagnosis between infective and serous labyrinthitis. He had under observation several cases in which both labyrinth and semi-circular canals had been drained and in which the hearing was fairly good.

Dr. NOEVAL H. PIERCE called attention to the fact that unless one exercised care in the amount of force employed in the Bárány test, a nystagmus might be produced which was mechanical rather than caloric. He used a small stream. He had done a good deal of work with this test and had found that it does not always act in the same way, nor the same at different times in the same individual. One fact was certain—that when a labyrinth was destroyed by a suppurative process the caloric test was negative. There were many phases of the subject still to be worked out.

Dr. DENCH cited the case of a young girl who had nystagmus to both sides. The caloric test was negative. The nystagmus and the vomiting persisted, and he was convinced that the trouble was in the cerebellum. He operated and found around the sheath of the auditory nerve a cerebellar abscess.

Dr. KERRISON, in closing the discussion, said that in diffuse suppurative labyrinthitis the hearing was probably always lost, though cases of circumscribed labyrinthitis had been recorded in which considerable hearing-power remained. Referring to Dr. Dench's report of a case of labyrinthine suppuration in which useful hearing remained, Dr. Kerrison said that the functional examination of such patients without the use of Bárány's noise-instrument was sometimes misleading. He cited a case under his observation in which the patient appeared to hear various sounds with the sound ear tightly closed with the finger, but could hear absolutely nothing with Bárány's noise-instrument in the sound ear. With reference to Dr. Goldstein's case, in which the nystagmus appeared only after fifteen minutes of continuous irrigation, Dr. Kerrison thought that this could hardly be regarded as a caloric reaction, since after fifteen minutes of irrigation with either hot or cold water the different parts of the semi-circular canal system would probably have reached a uniform temperature. Dr. Norval Pierce had alluded to the occasional difficulty in the caloric test in determining whether an observed nystagmus was really due to the irrigation. Dr. Kerrison suggested that such a doubt might be easily settled by using alternately hot and cold water, which should reverse the direction of the nystagmus. This, however, was apt to induce nausea and vomiting.

(To be continued.)

## Abstracts.

### PHARYNX.

**Wright, Geo. H.** (Boston).—*A Functional Relation of the Tonsil to the Teeth.* "Boston Med. and Surg. Journ.," May 20th, 1909.

The author considers that enlargement of the tonsils, without infection, coincides definitely with four periods, between two and eighteen years, of tooth eruption. After discussing the development of the teeth and the lymphatic arrangements in relation with these organs, he offers, in conclusion, six observations: (1) When a tonsil is normal infection from the external surface is rare. (2) Secondary infection through the lymph-channels is the usual source. (3) There are four periods of molar

eruptions, with some variations in time, when the tonsils may enlarge without infection or inflammation, as two, six, twelve and seventeen years. (4) Tonsils, though slightly enlarged when not infected, return to normal with complete eruption of the teeth. (5) Diseased teeth are a prolific source of enlargement of the glands through proximity of membranes, either directly by infection, or by toxins. (6) In the treatment of the tonsil by the specialist, may we not include as a routine the observation as to carious teeth and a recognition of these four periods of eruption coincident with slight enlargement? *Macleod Yearsley.*

**Hudson-Makuen.**—*The Facial Tonsils and the Teeth.* "Journ. of the Amer. Med. Assoc.," June 19, 1909.

The author describes in detail the close inter-relation between diseased conditions of the tonsils and teeth, and states that we cannot cure mouth-breathing and its resultant disastrous effects in all cases by merely removing tonsils and adenoids. When there are dental irregularities coincident these, too, must be regulated. Tonsils cause dental deformity by pressure on the molars. Old degenerated tonsils should be removed, though they are no longer active. *Macleod Yearsley.*

**Miller, A. H.**—*Anesthesia for Adenoid and Tonsil Operations.* "Boston Med. and Surg. Journ.," July 15, 1909.

The author advocates nitrous oxide, ethyl chloride, or a single administration of ether when the operation is a short one; in long operations he prefers ether or chloroform by a Junker apparatus. He draws attention to the danger of chloroform on account of the lymphatic diathesis. *Macleod Yearsley.*

**Pearson, J. S.**—*Streptococcal Pericarditis and Colitis following Tonsillitis.* "Lancet," May 1, 1909.

Two cases are recorded, one a girl, aged twenty, the other a girl, aged seven. The former died. Both cases showed *Streptococcus longus* in the blood, and the younger patient recovered after injections of anti-streptococci serum. *Macleod Yearsley.*

## NOSE.

**Mosher, H. P., and Kerr, J. D.**—*The Treatment of Atrophic Rhinitis with Vaccine.* "Boston Med. and Surg. Journ.," May 20, 1909.

The vaccine used was a mixed one of the *Staphylococcus albus, aureus and citreus*, the initiating dose being 400,000 increased to 900,000, the injection being made twice a week.

The conclusions are that none of the ten cases under treatment eleven months were cured, but their most annoying symptoms (odour, crusts, headaches) have been improved. The observers have not been able to determine how long the treatment should be continued. *Macleod Yearsley.*

**Adams, James.**—*The Pathology and Treatment of Atrophic Rhinitis.* "Glasgow Med. Journ.," July, 1909.

The author, after discussing thirty-one cases of atrophic rhinitis, divides them into two distinct types: (1) The common type consists of

those cases associated with sinnsitis. (2) The rarer type includes those not associated with diseases of the sinuses.

He states that the chief cause of atrophic rhinitis is the sequelae or end stages of a hyperplastic purulent rhinitis involving first the membrane, then the sinuses, and these again infect the membrane. Purulent rhinitis chiefly occurs in people who have a structural abnormality of the sinuses. Crusting and fœtor are favoured by the width of the nostril. The disease begins early in life, although not necessarily in childhood, and has a marked hereditary tendency.

In order to avoid this disease any purulent rhinitis must be carefully douched, especially in children after an eruptive fever. In adults the sinuses must be treated first; no paraffin injected if any sinuses diseased, but otherwise solid paraffin injections have proved very successful. The author recommends ionisation, and in children argyrol (25 per cent.), along with douching, fresh air, etc. *Andrew Wylie.*

**Goodale, J. L.** (Boston).—*On the Treatment of Chronic Suppurative Nasal Conditions by the Use of Lactic Acid Bacteria.* "Boston Med. and Surg. Journ.," July 15, 1909.

**Curtis, H. Holbrook** (New York).—*The Lactic Acid Bacilli in Ozæna.* "Merk's Archives," January, 1909.

These two papers deal practically with the same subject.

Goodale's series of cases extended over a period of four months, and are divided into those where an apparent influence was noted and those where no effect could be detected. The cases included conditions of atrophic rhinitis with ozæna and chronic suppuration of the various sinuses, and the preparation used was administered with an atomiser, crusts in cases of ozæna being first removed. Seven cases which were apparently influenced by using the culture are detailed, with four cases in which no result could be perceived. Goodale compares it with the effect of argyrol.

Holbrook Curtis's paper is his second communication on the subject (the first appeared in the *Medical Record* for July 11, 1908). He speaks enthusiastically upon the effect of the lactic acid bacilli in ozæna, and as a topical application in suppurative disease of the ethmoid cells and frontal sinus. He claims that they not only have an action on the pathogenic bacilli present, but also upon the nasal vaso-motor system. He also describes one case in which the preparation had a marked effect upon middle-ear suppuration. *MacLeod Yearsley.*

**Hajek, M.**—*Acute Empyema of an Ethmoidal Cell with Marked Exophthalmos.* "Arch. Internat. de Laryng., etc.," tome xxvii, No. 2, March-April, 1909, p. 308.

Patient, a medical man, the subject of acute coryza of eight days', and of exophthalmos of the right eye of four days' duration; otherwise perfectly well. Vision and eye movements normal; no sign of orbital cellulitis; no pyrexia.

Left side of nose normal; in right, muco-pus seen in middle meatus. Dulness on transillumination in infra-orbital region. Muco-pus in antrum found on proof-puncture. A sound in the middle of olfactory cleft gave impression of elasticity of ethmoidal region. Thereupon the author by means of his stylet broke down the inner wall of the ethmoidal labyrinth, letting out about two drachms of thick yellow pus, and at once

the exophthalmos disappeared. A sound passed into the pus-containing chamber revealed an extensive cavity in the ethmoid, the walls of which were bony save at one area in the outer wall, corresponding to the orbit, where there was a dehiscence; cure.

Discussing the mechanism of production of the exophthalmos, the author confesses himself forced by this case to admit that, contrary to his former opinions, it is possible for simple suppuration, acute or chronic, without the aid of an expanding lesion such as a mucocoele, to lead to true dilatation of a sinus.

The great extent of the cavity may, he thinks, be ascribed to the pre-existence of an abnormally large ethmoidal cell. *Don McKenzie.*

**Carter, W. W.** *Hay-fever and other Rhinological Causes of Asthma.* "Medical Record," May 29, 1909.

This paper discusses the different conditions which may be confounded with true hay-fever, as hyperæsthetic rhinitis, spasmodic asthma, and insists on the importance of connection of nasal conditions which may have an ætiologic bearing on the disease. Whereas in true hay-fever the correction of the nasal conditions may be only palliative, in pseudo-hay-fever this may result in a cure. In true hay-fever known palliative measures, if judiciously applied, will, in the majority of cases, carry the patient through the critical period in a state of comparative comfort.

Carter believes that true hay-fever and hay-asthma can be cured only by correcting the basic nutritive fault that is responsible for the susceptibility to the pollen toxin, and this can be accomplished only by a complete reform in the personal hygiene before the affection has become chronic. *Macleod Yearsley.*

## LARYNX.

**Hernan, R. B.** *The Treatment of Tuberculous Laryngitis.* "New Orleans Med. and Surg. Journ.," July, 1909.

The author insists upon the beneficial effects of high altitudes, tuberculin, sunlight, and complete rest of the cords, and deprecates severe treatment. *Macleod Yearsley.*

**Bloom, J. D.** *Low Tracheotomy for Foreign Bodies in the Trachea and Oesophageal Conditions resembling Tracheal Obstruction.* "New Orleans Med. and Surg. Journ.," January, 1909.

Details a number of cases of interest supporting the author's contention that a low tracheotomy effects a speedy relief by tracheal effort in the delivery of the foreign substance, lessens respiratory effort, and has a better cosmetic effect. *Macleod Yearsley.*

**Robertson, A. R.** *Congenital Imperforation of the Oesophagus with Tracheo-Oesophageal Fistula.* "Boston Med. and Surg. Journ.," August 12, 1909.

The author reviews the literature and reports the case of a male child, aged twelve days, presenting this rare anomaly. *Macleod Yearsley.*

## EAR.

**Mosher, H. P.**—*Congenital Occlusion of the Cartilaginous Canal.* "Boston Med. and Surg. Journ.," July 15, 1909.

The author describes the interesting condition found in girl twins, aged four. In both the cartilaginous canal gradually tapered to a point, and about half an inch in became occluded. One twin had also, at birth, a malformation of the left lower eyelid. Exploratory operations were undertaken, and the descriptions of these, with the illustrations given, should be consulted in the original paper.

*Macleod Yearsley.*

**Blake, C. F.**—*Superficial Dermatitis of the External Auditory Canal.* "Boston Med. and Surg. Journ.," August 5, 1909.

The author details investigations made several years ago into the lines of movement made by the epidermal layer of the drumhead. A discussion upon superficial dermatitis follows.

*Macleod Yearsley.*

**Wilson, J. Gordon.**—*The Nerves and Nerve-endings in the Membrana Tympani.* "Journ. of Compar. Neurol. and Psychol.," vol. xvii, No. 6, 1907.

Most of the nerves entering from the external meatus pass down over Shrapnell's membrane towards the handle of the malleus. A smaller number enter at the limbus. These nerve-bundles break up to form a wide-meshed, non-medullated network in Shrapnell's membrane, from which numerous branches pass to similar rich plexuses and terminals in the membrana vibrans, around blood-vessels, in subcutaneous and sub-epithelial tissues and in epithelium. The tortuous and spiral branches, the delicate interlacement of fibrils, and the general arborisation which characterises the terminal distribution of the minute nerve-twigs are clearly depicted in an accompanying plate.

The author compares the system of distribution with that found in the cornea, and is inclined to suggest that in both cases the distribution has the effect of intensifying stimuli, so that even slight stimulation is interpreted by the sensorium as pain rather than as simple touch.

Investigating the source of the nerve-fibres in the membrane he states that in monkeys, at any rate, the supply is derived chiefly from the auriculo-temporal nerve and but to a slight extent from the vagus.

*Dan McKenzie.*

**Dr. J. Tommasi.**—*Researches on the Determination of the Auditory Power by New Methods of Measuring with Tuning-Forks.* "Bollettino delle mat. dell'Orecchio, Naso e gola," March, 1909, Florence.

The author, guided by the investigations made by Professors Stefanini and Gradenigo, has examined their method and adds the following conclusions:

The method of testing by tuning-forks furnishes the logarithmic decrease of vibrations for each tuning-fork of whatever tone.

The law of vibration is characteristic for each diapason and depends upon its dimensions, its form and the material of which it is made, that is to say, it is not the same for all tuning-forks which give the same note.

The test followed by different persons of normal hearing results in



the same value of logarithmic decrease provided that the conditions of the surrounding atmosphere are the same.

The result of the method of weight and that of the optic method agree well, provided that it is possible to make the comparison using portions of the curve of vibration by which the size of the vibrations shall be the same in the two methods.

The Stefanini-Gradenigo method strives to find the length of vibration corresponding to the beginning of the function of the auditory nerve.

The comparison between the length corresponding to the beginning of the function deduced from this method and from that of Straycken shows that the mere length of vibration of the tuning-fork is not sufficient to determine the minimum of energy necessary for producing the sensation of sound. *Grazzi.*

### MISCELLANEOUS.

**Allport, F.**—*A Plea for the Systematic and Universal Examination of School Children's Eyes, Ears, Noses and Throats.* "New Orleans Med. and Surg. Journ.," August, 1909.

A strong case is made out and suitable directions given as to the best method of carrying out the necessary examinations.

*Macleod Yearsley.*

**Lewis, E. R.** (Dubuque, Iowa).—*Negative Pressure as a Therapeutic Agent in Diseases of Nasal Accessory Sinuses, Throat, Ear and Mastoid.* "Arch. of Otol.," December, 1908.

The author's experience leads him to consider induced hyperemia as of great value. In the cases he reports the usual methods are employed along with the negative pressure.

*Dundas Grant*

### REVIEW.

*Lehrbuch der Ohrenheilkunde für Ärzte und Studierende (Text-book of Otology for Practitioners and Students of Medicine).* By Dr. PAUL OSTMANN, Professor of Medicine and Director of the University Polyclinic for the Ear, Nose and Throat in Marburg. (With 100 illustrations, 43 curves and 51 charts of hearing.) Leipzig: Vogel, 1909.

The name of Professor Paul Ostmann is familiar to all readers of contemporary current otological literature, more particularly in connection with his serious endeavours to provide us with a means of calculating the actual rate of diminution of the intensity of tone of the tuning-fork. It is familiar to all that the diminution of intensity is not in exact direct proportion to the duration, although most of our tuning-fork tests are carried out on this supposition, no doubt, however, with a due recognition of the amount of fallacy attaching to it. The question has been approached in various ways by different investigators, but Professor Ostmann adopted the visible method, namely by placing on the arm of the tuning-fork some shiny grains of flour and observing and measuring

the extent of their vibration by means of the microscope. The outcome of it was an almost stupendous list of figures for enabling us to correct the results given by certain tuning-forks. This labour in the cause of accuracy is characteristic of Professor Ostmann's work, and we open his "Lehrbuch" with the expectation of finding it constructed on the same foundation. In this we are not disappointed, and in the 533 large pages of which the book consists we find all the aspects of disease of the ear discussed with the utmost thoroughness and full of the evidence of original research and thought on the part of the author. It may be noted, however, that Professor Ostmann does not occupy a redundancy of space with the description of his "visible" method in view of the practical difficulties in the way of its universal employment, and he lays much more stress upon those modes of investigation which can be carried out within a reasonable amount of time. Attention is drawn (p. 35) to Wien's curve of sensibility to tones of various pitch, this increasing from octave to octave with considerable rapidity till the higher ones are reached, when a downward inclination of the curve takes place above  $c^2$ . The author believes that "bone-conduction" acts directly on the labyrinth and not through the intermediary of the tympanic apparatus, and accepts Mack's views with regard to increased bone-conduction. Curves and charts of various kinds are made use of to illustrate, among other things, the field of audition, whether continuous, shortened, or interrupted, also the changes in the hearing power from day to day during the course of diseases of the ear. The graphic charts of percentages of hearing duration for different tones, as first introduced by Hartmann, are illustrated from actual cases of diseases of the conducting apparatus, the labyrinth, auditory nerve and brain. The figures formed by these outlines are called "hör-reliefs," a term which translators might well keep in mind, as it might reasonably be used to indicate auditory perspective and give rise to confusion. A chart is also given of the average specific gravity of the discharge in cases of acute suppuration with and without mastoiditis respectively, from A. af Forselles (p. 85). It may be mentioned that the details in regard to this test are set forth with some minuteness, though apparently the writer is not very strongly convinced of their value. The operations in the ear are described in sixty-three pages before the special descriptions of the various diseases, and possibly this arrangement has its advantages. It is very complete and clear, the operations on the labyrinth receiving due attention. An illustration of the field of operation in a case of cerebellar abscess would be a very desirable addition. It need hardly be said that preference is given to access through the posterior wall of the mastoid cavities internal to the sigmoid sinus. Oto-sclerosis has a chapter to itself apart from diseases of the middle ear, under the heading of "Primary Disease of the Osseous Capsule of the Labyrinth, Oto-spongiosis or Oto-sclerosis." The author leans to the opinion that hereditary specific cachexia is a frequent factor in its evolution, a view which some recent investigations by means of Wassermann's test seem to have shaken. The pathology, symptoms and course are admirably described. The various causes of disease of the internal ear and auditory nerve apparatus are very fully detailed, the chapter on the toxic forms of nerve-deafness being exceptionally full and valuable. On the whole this volume has peculiar qualities of its own which will entitle it to a place on the book-shelves of every teacher and earnest student of the subject.

Dundas Grant.

THE  
JOURNAL OF LARYNGOLOGY,  
RHINOLOGY, AND OTOTOLOGY.

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**ON THE TREATMENT OF CICATRICIAL STENOSIS OF THE  
LARYNX BY THE METHODS OF O'DWYER AND ROGERS.<sup>1</sup>**

BY DR. D. BRYSON DELAVAN,  
New York.

I HAVE been asked to address you upon the subject of the treatment of cicatricial stenosis of the larynx by intubation, a method originated in America by the late Dr. Jos. O'Dwyer, and more recently perfected by Dr. John Rogers, jun., both of New York. In doing so I shall confine myself strictly to the topic in hand, and shall endeavour to present the subject as briefly as may be possible consistent with clearness.

In the successful management of stricture of the larynx three things are absolutely essential:

- (1) That the stricture be relieved.
- (2) That the relief be permanent.
- (3) That the treatment of the case be conducted with the least possible injury to the parts involved.

Many operators have endeavoured to treat these cases, and by various means. Some, like Sir Morell Mackenzie, Whistler, Von Schroetter and others have used intra-laryngeal methods. Others have resorted to external operations of a more or less extensive character. Treatment by occasional and temporary dilation has proved a failure, while operative measures have

<sup>1</sup> Read at the Belfast Meeting of the Oto-Laryngological Section of the British Medical Association, July, 1909, by courtesy of the Editors of the *British Medical Journal*.

generally left the case worse off than it was before. It remained for O'Dwyer to solve the problems of the situation and to effect a method by which all of the necessary indications were completely met and the disadvantages of other methods avoided. First, he proved the then unknown fact that the larynx would tolerate the presence of a foreign body for indefinite lengths of time. Then he devised the O'Dwyer tube, an instrument which, with suitable modification, fulfils in a remarkable degree the indications present in the cases under our discussion.

No great contribution to surgery has ever been more modestly presented, nor has surgery often received a gift more indicative of important future results, than the article published by O'Dwyer in the *New York Medical Record* for June 5, 1886, entitled "Chronic Stenosis of the Larynx Treated by a New Method, with Report of a Case." How thoroughly the author himself appreciated its value will appear from his own words: "Chronic stenosis of the larynx is one of the most unsatisfactory diseases which the physician is called upon to treat. Although I have treated only a single case of it with my laryngeal tubes I am fully convinced that they will prove infinitely superior to anything yet devised for the relief of this unfortunate class of sufferers."

Two years after the foregoing was published Dr. O'Dwyer, in the following remarkable statement, says: "Had intubation of the larynx proved a complete failure in the treatment of croups I would still feel amply repaid for the time and expense consumed in developing it, for I believe that it offers the most rational and practical method yet devised for the dilatation of chronic stricture of the glottis" (*New York Medical Journal*, March 10, 1888).

Since the publication of O'Dwyer's prophetic article the value of his method has been recognised, and it has been applied with success by large numbers of experimenters in many parts of the world. Many who at first objected to it are now its firm advocates. Moreover, an ever-increasing amount of clinical evidence, based upon the actual treatment of cases, has been accumulated, all of which tends to prove that intubation, used under proper conditions, has succeeded in effectively meeting the indications present in the treatment of chronic stenosis of the larynx.

The work so ably begun by O'Dwyer has been taken up by others, notably by Dr. John Rogers, jun., of New York, through whose keen appreciation of the possibilities, rare technical skill and untiring ingenuity and patience, the method of O'Dwyer has been brought to a high degree of perfection, and it has been used

with success not only upon adults but upon children and even upon very young infants, as has been abundantly proved through the brilliant series of cases operated upon and reported by Dr. Rogers. While a majority of these were due to hypertrophic laryngitis some were complicated with cicatrices, and all of them demonstrated the practicability of the method.

Ten of Rogers' successful cases were under six years of age. There was one case each at the ages of one, two, five and six years respectively, and three each at three and four. One case is interesting because the stenosis was due to hypertrophic laryngitis following intubation for diphtheria, and the case was complicated by cicatrices resulting from several laryngo-fissures and tracheotomies, the former done for the purpose of allowing the incision and the removal by dissection of numerous cicatricial bands. At the end of two years of treatment the patient was apparently cured.

Among the other varieties of laryngeal obstruction to which the method of intubation is applicable, those which come within the limits of our discussion, or which represent conditions which may give rise to the formation of cicatrices, are as follows:

(1) Cicatrices of traumatic, operative, or inflammatory origin.

When following tracheotomy the deformities may be due to: (a) Contraction of the posterior soft part of the trachea following separation anteriorly by the cannula of the tracheal rings. (b) Dislocation of the cricoid forward and downward, especially when the fistula is through or close to it. (c) Over-riding of the cut anterior ends of the tracheal cartilages in too long a fistula. (d) Inversion of the cut anterior ends of the tracheal rings, especially if the fistula is to one side of the median line. (e) Contraction of the trachea around the cannula, due to sloughing of the cartilages or rings. (f) Spur formation posteriorly (as after enterostomy), especially in combination with contraction of the posterior soft portion of the trachea, or dislocation of the lower segment forward and the upper backward, or both.

(2) Granulations around a cannula or intubation-tube, which are much less common than is generally believed.

(3) Hypertrophic subglottic laryngitis, most commonly encountered in retained tube cases.

(4) Prolonged and repeated diphtheritic inflammation, which must be exceedingly rare in these days of antitoxin.

Before attempting to describe the O'Dwyer-Rogers method, a word must be said as to the principles upon which it is based and the indications which justify its use. It is essential that these

indications be very clearly understood. The interior of the larynx is a cavity or tube, having rigid inelastic walls, and lined with various soft tissues, the latter liable to injury, and therefore to the formation of cicatrices. The presence of cicatrices at the posterior aspect of the larynx is likely to interfere with the normal physiological movements of the dilators of the glottis, as well as to encroach upon the glottic space. Anteriorly, a lesion situated at the apex of the vocal bands is analogous to one located in any other angle of the body, as, for instance, between the fingers or at the corner of the mouth. A solution of continuity of tissue in any such angle is sure to result in adhesions as the process of healing advances, and in many cases such adhesion if left to itself will only be limited by the extent of the pre-existing lesion.

The history of scar-tissue is much the same wherever cicatrices may be found. For example, any attempt to divide web fingers without closing the wound at the apex of the angle in such a manner that the granulating parts cannot come together will surely result in failure, and will produce a condition of adhesion worse than that which existed before. This is one of the oldest recognised surgical facts.

Nor is it only in the case of V-shaped wounds that this tendency to adhesion is observed. In nasal surgery it is a matter of commonest occurrence that unless injured parts have been separated from each other until healing has been fully accomplished adhesion is almost certain to take place. This is particularly true of the larynx. The incision of a thin web of tissue may possibly be successfully accomplished, but incisions into dense scar-tissue will almost invariably re-unite, even after long-continued dilatation.

The incessant activity of the movements of the larynx and the delicacy of its soft parts render it peculiarly liable to accident and to the conditions which we are considering. None of the methods possible in other situations, such as the transplantation of epithelium, the use of skin-flaps, or any of the other ingenious plastic devices used in other situations have been made available in the larynx without resort to laryngo-fissure.

What has just been said at once suggests the fact also that the attempted removal of cicatrices from the larynx is not likely to be attended with ultimate success, since it appears that in most cases, with the lapse of a relatively short space of time, the intra-laryngeal obstruction has reappeared. This has been demonstrated time and again in another connection, namely, in the attempt to

relieve dyspnoea, due to abductor paralysis of the larynx or to other causes, by which the vocal bands have fallen together to such an extent that proper respiration was impossible. In such cases the performance of thyrotomy and the removal of one or both vocal bands has almost invariably resulted in ultimate failure. So also when the attempt has been made to excise cicatrices or to incise them and afterwards dilate, ultimate failure has been in even greater measure the rule.

It cannot be too clearly understood that operations upon the larynx, whether from within or without, tend in themselves to the production of stricture. In view of these facts it would seem necessary that, in order to obtain permanent success, the cure of this condition should be based upon principles different from those involved either in simple temporary dilatation, in incision of the scar with dilatation, or in resection of soft parts as has heretofore been practised.

The principle of treatment upon which the greatest success in these cases seems to depend is, that scar-tissue in general when subjected to long-continued stretching will finally lose its resiliency. For this there are many illustrations, as, for example, the stretching of the cicatrix in the case of a scar following a laparotomy, or following an operation for hernia and the like. Instances are not wanting to prove that the same results have been obtained in the larynx. Proof of this would seem to lie in the fact that cases of cicatricial stenosis in which the stricture has persistently returned after relatively short periods of intubation have been cured by long-continued retention of the tube.

In order to succeed in producing satisfactory pressure upon the cicatrix two things are absolutely necessary :

First, that the instrument be adjusted with great accuracy to the shape as well as to the size of the stricture. The ordinary O'Dwyer tube will not answer the purpose. Each case must have its own tube, which must be modified in every instance to meet accurately and completely the special requirements of the conditions in hand. To adapt the tube properly to the case will demand on the part of the operator much skill and experience, and a practical development of the sense of form and proportion. All of these qualities and attainments are possessed by Dr. Rogers in a high degree, and it is by reason of them that he has been enabled to bring the method to its present perfection.

Second, that the intubation instrument used be large enough to exert steady and active pressure-force upon the contracted

tissues, stretching them up to the limit of possibility. Moreover, in order to insure permanent success the stricture must be under tension for at least a year, in some cases possibly much longer.

As to the merits, absolute or relative, of the procedures under discussion, time is an all-important factor in making possible a decision. No method now in use has been under observation long enough to prove that a condition of stenosis of the larynx apparently cured by it may not at some time return. Such is the history of other strictures and such the result of experience in cases observed of this class.

Some interesting questions arise as to whether attempts at treatment made according to the methods now in use may not in themselves lead to future troubles. In other words, will cases which have been thus treated for stenosis show at subsequent periods of the patient's life a tendency towards any special form of accident? Most especially, will they or not be likely to suffer in undue proportion from degenerative changes in such tissues as may remain to them in the interior of the larynx?

The lapse of at least a number of years will be necessary to demonstrate the attainment of permanent cure and the relative immunity from undesirable remote effects. Even then the only approach to certainty will be gained from the study of considerable numbers of cases up to the very end of life.

The management of these cases by any of our present methods is trying and more or less dangerous, difficult enough for both patient and physician to cause every one of us to heartily welcome any new suggestion giving promise of better things.

According to John Rogers (*American Journ. of the Med. Sciences*, November, 1905; April, 1908) the principle which he has found successful in the treatment of hypertrophic laryngitis and in cicatrices of the upper part of the respiratory tract involve long-continued and constant dilatation, sufficient to stretch the contracted tissues to the utmost limit they will bear without sloughing, and up to the largest normal calibre of the passage. Thus the obstruction is overcome by the production of a continuous pressure-atrophy in the affected parts.

To accomplish the continued dilatation and consequent pressure-atrophy necessary to overcome the obstruction of either a hypertrophic laryngitis or a cicatrix, a properly made O'Dwyer intubation-tube is almost a perfect instrument. It can be worn without harm to the patient for months or years, and Rogers has observed such patients with the tube in place pass successfully through measles,



pneumonia, typhoid fever, and even pertussis; indeed it does not seem appreciably to increase the gravity of the prognosis of these affections. In a case of O'Dwyer's the tube was retained without withdrawal by an adult for over two years. The tube, as is well known, possesses a head which rests on and in the aryteno-epiglottic folds, a neck constricted from side to side to fit between the vocal cords within the glottis, and below a retaining swell which expands to occupy the space at and below the cricoid cartilage. The lower end in the children's sizes is made longer than in those used for adults, as it was designed to extend well beyond the false membranes of a laryngeal diphtheria. The tip is again constricted from side to side to pass easily through the glottis. The "normal" tubes were designed by Dr. O'Dwyer from casts and measurements to fit somewhat loosely the average larynx and exert the least possible pressure upon acutely inflamed tissues compatible with retention of the instrument. When this stage of the disease has passed and has been succeeded by a chronic thickening or a cicatrix, the tube, to obtain the pressure necessary to produce an atrophy of the abnormal thickening, must be modified into a "special" instrument for each case. That is, with the patient under deep general anaesthesia, a number of normal tubes are passed through the larynx until one is found in which the retaining swell distends the constriction to the limit the operator believes it will bear without sloughing. If the difficulty is dependent solely upon a soft hypertrophy, the diameter of the retaining swell will be regulated largely by the diameter of the passage within the cricoid cartilage. Inasmuch, however, as the retaining swell lies when the tube is in place just below this point, where the trachea is capable of considerable distension without damage, quite a little force in the test-tubage is permissible. Having thus ascertained the largest possible diameter of the larynx a "special" tube is made, of the length of the normal tube, suitable for the age and development of the patient, but with a retaining swell having the same diameter as that of the trial tube. The neck of this "special" tube, however, to exert pressure upon the hypertrophied intra-laryngeal tissues should be as large as possible, but its transverse diameter must be  $\frac{2}{32}$  in. smaller than the retaining swell, or it will certainly be coughed out. Also the head must have a diameter  $\frac{6}{32}$  in. greater than the retaining swell to prevent the instrument from slipping within the larynx. These measurements apply to the ordinary hard-rubber tube, but when the heavier metal tube is employed the diameter of the head should

exceed that of the retaining swell by  $\frac{7}{32}$  in. or even  $\frac{8}{32}$  in., especially for adults. For very small children these measurements can be changed from thirty-seconds to sixty-fourths of an inch. It must be borne in mind that a difference of  $\frac{3}{32}$  in. in the transverse diameters of the neck and retaining swell is the very least which experience has demonstrated is sufficient to keep the tube in place, and many patients will require a tube with the neck  $\frac{4}{32}$  in. or even  $\frac{5}{32}$  in. less in diameter than the retaining swell. Only a trial will show what is necessary. But the neck of the special tube must be considerably larger than that of normal, or a failure to cure will probably result.

When auto-extubation complicates the difficulties—and it may be a very dangerous complication if assistance is not constantly and immediately available—tracheotomy is almost always necessary. Some patients with hypertrophic laryngitis will cough up any tube which can be inserted, and unless it is quickly replaced will strangle. Under these circumstances it is generally essential to provide an opening in the trachea, though there can be no expectation of thus accomplishing a cure of the stenosis. Indeed, it will probably only add a cicatrix or a deformity in the shape of an obstructing “spur” in the posterior wall of the trachea if the cannula is worn long enough. The operation should be performed carefully in the median line, well below the cricoid cartilage, under full anaesthesia, with the tube in place. At the same time opportunity is thus given to obtain the necessary measurements for making what Rogers has described as a “plugged” or “clamped tube.” This is a “special” intubation-tube with the neck (or lower end if there is a cicatrix low down) enlarged to exert pressure upon the narrowed area. The “clamp” or “plug” portion of the tube is a removable attachment designed to fasten to the tube at right angles through the tracheal fistula after the tube is inserted, and thus prevent its displacement. The larger tube will support a “plug” or a cylindrical piece of hard rubber, which is long enough so that when in place its outer end extends through the fistula about an inch beyond the surface of the neck, to allow easy manipulation, and its inner end, perforated to correspond to the lumen of the intubation-tube, screws into a hole in the anterior wall of the intubation-tube. The “clamp” is employed for smaller instruments, and is made, like a pair of obstetrical forceps, of two little silver blades, which are passed through the fistula into grooves on the sides of the tube and held there by a “collar” screwed down around the shanks.

Of these two attachments the plug is probably better for large

or for metal tubes, and the clamp for smaller instruments and those made of rubber. The clamp is also better in that it can be made small enough not to press apart appreciably the severed anterior segments of the trachea, and thus, by preventing contraction in the soft posterior wall, there will not be so much danger of narrowing the calibre of the passage when the instrument is removed. A tube with either of these attachments cannot be coughed out and can be worn for an indefinite period without harm, and in all respects is infinitely better than the ordinary cannula. If, therefore, a patient with a hypertrophic or cicatricial stenosis of the upper air-passages has to be tracheotomised, one of these instruments should be inserted as soon afterward as it can be obtained, and continued in place as advised for the usual special tube. Neither a plugged nor a clamped tube should, however, be employed unless there is some good reason for it, as the tracheal fistula gradually, of course, becomes permanent and presents its own difficulties, although these may be offset by the ease with which after removal of the tube any adductor spasm can be met.

The usual intubation-tube is made of vulcanised rubber, which is an ideal material, never known to clog and practically indestructible. It must, however, be removed and cleaned about once in a month or six weeks, as the head generally becomes foul, and this decomposing matter might cause sepsis or possibly obstruct the lumen. But occasionally in cases of hypertrophic laryngitis the special rubber instrument, even after months of continuous use, will seem to produce no improvement. Then by changing to a similarly made metal tube the desired result will generally be obtained. We are unable to explain this except that the metal tube is heavier and so may exert more pressure; or there may be some electrolytic effect, as it is constructed of bronze or brass heavily plated with gold, and so consists of at least two metals which are in contact with moisture. Whatever reason may be given the metal tube will often succeed when the rubber has failed, but the latter should always be tried first, as in the average case it is sufficient and safer. The metal tube soon becomes rough with a presumably calcareous deposit, which catches the secretions, and in at least one of Rogers' cases thus produced asphyxia.

After wearing such an instrument, preferably of hard rubber, for months, it is necessary to consider the adductor spasm both for diagnosis and treatment. When a cure ought to have been obtained the conditions may seem entirely unchanged, and the true state of affairs can only be ascertained by general anaesthesia.

Under ether, then, about once in every three or four months the tube should be carefully removed and the respiration observed. If it is still completely or partially obstructed the dilatation must be resumed. But if the breathing is natural and easy then spasm may be confidently diagnosed, especially if in the first effort at coughing, as consciousness comes back, the dyspnœa recurs. To overcome this there must be inserted for several days or weeks a tube with a head and retaining swell and length like the previously worn dilating instrument, but with a neck as small as possible in order that motion to some extent can occur in the openers of the larynx. If the dyspnœa makes its appearance slowly during the course of hours or days it is not due to adductor spasm, and there is no escape from the previous treatment. When enough time, or some one or two months have passed with the very small-necked tube in the larynx, and the faulty muscles may be considered to have regained their strength and the patient his power to innervate them, the small tube is removed under ether and a little morphine is administered to allay spasm and nervousness. For the first few hours, however, the attendant and the patient will suffer much anxiety, as frequent attacks of stridulous inspiration and more or less dyspnœa will occur during the readjustment to new conditions. But with patience and the assistance of anti-spasmodics a day or two will suffice to overcome all such difficulties.

A fibrous stricture is managed in exactly the same way as above described, with the exception of the primary dilatation in case the stenosis is too tight to admit a tube. Under these conditions there will almost surely be a tracheal fistula present, or one will be urgently needed. Through this under general anæsthesia urethral sounds are passed up and down until considerable resistance is encountered. Then measurements should be taken upon an ordinary tube and a "special" tube constructed, having its specially enlarged part placed to correspond with the location of the stricture, and with regard to the normal diameter of the air-passage, which is capable of much stretching without damage except within the cricoid ring. When the latter has been cut in a hasty previous operation there seems to be little danger of sloughing under almost any reasonable pressure, but if it is intact such an accident is conceivable, and actually occurred in a case cited by O'Dwyer. Sometimes in very dense strictures a small tube can be inserted for a week or two, and afterwards a larger size. But no stricture should be considered hopeless provided any trace of mucous membrane remains, as Rogers has had experience in at least one such case in

which the passage through the larynx had to be opened by a careful dissection very much like an impermeable stricture of the urethra. A small tube was then inserted and the wound partially closed, and later larger instruments were employed. Eventually an almost perfect result was obtained.

As regards the prognosis and duration of treatment in patients with hypertrophic laryngitis or cicatricial stenosis, the statistics of the twenty-three cases previously reported by Rogers furnish much information. One case of hypertrophic laryngitis (Case I., the only one in the series which seemed to have occurred spontaneously, and without a previous diphtheria, recovered permanently at the end of about four weeks of dilatation by tubes. Another of cicatricial stenosis previously reported as a failure required forty-nine months, or a little over four years, of continuous intubation, and during the latter two of these four years the tube was not once removed from the larynx. It has now been out for over six months, and there is no sign of re-contraction and the voice is returning. Cases X, XII, and XIII, the most discouraging of the series of instances of hypertrophic laryngitis complicated by cicatrices due to tracheotomies and explorations through the thyroid cartilage, required respectively about six, three, and five years of dilating with tubes to effect a cure, which now may be considered permanent, as they have remained for nearly two years without any sign of difficulty and all have good voices. "Cases X and XIII," says Rogers, "would have recovered sooner if I had had less impatience and more experience, for as soon as they seemed well the tubes were removed, with the result that the cicatrices re-contracted. A fibrous stricture apparently requires at least two years of continuous dilatation to the utmost limit of the normal lumen of the respiratory tract before it can be considered as permanently overcome. Even then it may gradually re-appear, and if it does another six months or a year of continuous tubage must be endured, but there is a reasonable certainty, proved by experience, of thus gaining an ultimate cure. Cases of hypertrophic laryngitis are slow and troublesome enough, but once well do not recur as does a cicatrix. Case XII, one of hypertrophy, had to wear a dilating tube from February, 1904, until March, 1906, and then, owing to adductor spasm, a small tube until the following June, and thus required a little over two years of treatment, which seems to be about the average."

*Chronic Cicatricial Stenosis of the Larynx Cured by Dilatation (Case XXII of Rogers' Report).—*M. C——, aged thirty-five,

unmarried, residing in New York, of excellent family history and good general health, began to suffer from hoarseness in June, 1901. No history of any constitutional disease whatever has ever been obtainable. The hoarseness was evidently regarded by her physician as being due to tubercular laryngitis. The larynx was several times "canterised," but in spite of change of climate and other treatment, pain, dysphagia, and finally dyspnoea finally developed.

On November 1, 1902, patient was intubated with a small 10 to 12 child's tube for a short time. After the removal of the tube the dyspnoea recurred, and on January 11, 1903, it became so urgent that a rapid tracheotomy was done at the New York Hospital. After this breathing without the cannula was impossible.

I had seen the patient in consultation in January, 1902, and had found a severe general laryngitis with marked erosions upon the free borders of both vocal bands, extending from the anterior commissure backwards for a little more than half the length of the vocal bands. I advised a certain line of local treatment for the larynx, and insisted that unless an O'Dwyer tube of sufficient size were inserted into the larynx and worn for a considerable length of time that the erosions upon the vocal bands would result in cicatricial union of the bands with dangerous obstruction. I did not see the patient again for more than a year. Meanwhile, as already stated, an attempt had been made to insert an infant-sized tube, but the tube was not properly retained, and was too small to accomplish any good result.

In the performance of the tracheotomy at the New York Hospital the conditions were urgent, and the incision into the trachea was not made directly in the median line, a circumstance which gave rise to much trouble later, whenever it became necessary to re-insert the tube after removal for cleansing, and which on one or two occasions nearly cost the patient her life.

Subsequent to the tracheotomy the wearing of the tube became very irksome and the patient's general health suffered seriously in consequence. She had constant bronchitis and at one time appeared to be going into a decline. The lumen of the larynx meanwhile remained so contracted that respiration without the tube was impossible. The voice, however, was fairly good. The tracheal cannula was worn for about two years, and at the end of that time the contraction of the interior of the larynx seemed to have reached a maximum.

Early in 1905 the patient placed herself under my care. She had

become very desirous of being relieved of the incessant annoyance of the cannula. In consultation with Dr. John Rogers it was determined to attempt to relieve her permanently. The method of dilatation by means of the O'Dwyer tube was adopted and the first intubation was made by Dr. Rogers and myself in March, 1905. At this time it was found that only with the greatest effort sufficient air could be forced through the larynx to make articulation intelligible. Examination revealed no aperture, the larynx apparently being totally occluded below the vocal cords. The cervical fistula was large, through the second and third tracheal rings a little to the left of the median line, and covered with epithelium throughout.

March 22, 1905.—Under chloroform the small urethral sound could not be made to pass the stricture either from below or above, but by working from below through the fistula a fine probe was finally passed up into the pharynx. This was followed first by a fine dilating forceps, and then by urethral sounds of increasing calibre in rapid succession entered through the fistula until No. 40 F was admitted with considerable resistance. The stricture seemed to be in the nature of a thick diaphragm at and below the vocal cords. Strangely enough there was no contraction or deformity around the fistula and no troublesome "spur" opposite it posteriorly. A No. 6 adult intubation-tube was then inserted without difficulty and worn with very little complaint until March 29 (one week). After its removal the larynx, including the cords, seemed normal, except for some ulceration, especially under and involving the right cord. The larynx was inspected daily, and on April 3, as the ulceration was very close to the anterior commissure and a band seemed to be developing at that point, the No. 6 tube was re-inserted without difficulty to be worn until the ulceration should have healed.

On May 8 following the tube was removed and everything found normal. Mobility of the cords was excellent, but they were deeply congested. A small, whitish protuberance existed just below the anterior commissure. It seemed to be the remnant of the original cicatricial diaphragm, but it offered no obstruction to respiration.

On May 15 these protuberances had slightly enlarged, and although there was no apparent obstruction to respiration it seemed wise to re-insert the tube in the hope that they might ultimately disappear. Following this the tube was re-inserted and worn for varying lengths of time, but its extraction was always quickly followed by dyspnoea requiring re-introduction.

At the end of more than a year of this line of treatment, and after an unusually long period of continuous wearing of the tube, the appearances of the larynx were so favourable as to make it hopeful that re-contraction would not occur. Within five weeks of the removal of the tube the dyspnoea returned. At this time the cicatrices and thickening seemed to have been aggravated and to have become, if anything, worse than ever. Not only were the vocal bands adherent anteriorly, but below them was a dense thickening, which extended downward upon the anterior wall of the subglottic space. There was much thickening also at the posterior commissure.

It was decided to make an incision in the anterior obstruction throughout its full depth and to insert an O'Dwyer tube, which should be retained continuously until healing of the incision had been completed. In carrying out this operation the admirable cutting dilator of Dr. J. W. Gleitsmann, of New York, was used, and we found it both theoretically and practically by far the most convenient, accurate, and effective instrument of its kind. By its aid division of the obstructed tissue was easily accomplished with but little pain. An O'Dwyer tube of maximum size was then inserted into the larynx and worn from the date of the operation, June, 1906, until the following September, when it was removed and left out until January, 1907. At this time, however, there seemed to be much swelling in the larynx, both anteriorly and at the posterior commissure. The swelling seemed to be an infiltration of the tissues due to irritation.

In January, 1907, there was a sudden return of urgent dyspnoea under somewhat startling conditions. A large O'Dwyer tube was re-inserted, and was worn continuously for more than eight months, namely, until September, 1907, when it was taken out. A small amount of swelling still remained, both in the anterior and posterior part of the larynx, but the patient was kept under careful observation, and this, instead of increasing, seemed to subside. As time passed, the laryngeal space visibly increased until but slight trace of the above-mentioned thickenings remained.

Since September, 1907, a period of over two years, the patient has had no trouble whatever with breathing. Her general health has improved in every respect. She has been able to resume the normal affairs of life with complete comfort and success and has spent the summer of 1909 travelling in Europe.

While this result has been gained at the sacrifice of what remained to her of her voice, she is nevertheless able to com-



innocuate without difficulty, and in all other respects the cure of the laryngeal condition has been attended with nothing but advantage.

The result must be considered a brilliant one when the discomforts and disabilities of the life-long wearing of a tracheal cannula are remembered. From the simple relation of the case as well as from the present appearance of the larynx, it is plain that nothing short of extraordinary skill and untiring patience on the part of Dr. Rogers could have brought it to a successful issue. Nor does it seem in the light of our present knowledge that any better method of treatment could have been employed.

### A CASE OF HUGHLINGS-JACKSON-MACKENZIE SYNDROME.

By J. D. LITHGOW, M.B., C.M., F.R.C.S.E., ETC.,

Assistant Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh.

It was about the year 1864 that cases of paralysis of the spinal accessory nerve came to be recognised and described by Hughlings Jackson and Morell Mackenzie, and since then cases have been recorded by Schmidt, Avellis, Semon, Bernhart, Steven, Barlow, and Spicer. These names occur to one but there are doubtless others. However, cases of this class are still sufficiently rare to merit individual record. The cases described differ one from another according as the nerve is more or less affected in degree and distribution; in the latter respect the larynx and the palate have their motor nerve supply pre-eminently interfered with. The following case presents the peculiarity that whereas the distribution of the paralysis was wide there was subsequently, with the exception of the muscles supplied by the laryngeal fibres, a complete restoration of function in the affected regions.

The case is further of interest in respect of causation in-so-far that although no specific history was available, the condition of the patient, and of the paralysis, rapidly reacted beneficially to the exhibition of iodide of potash.

Mrs. —, aged forty-three, actress, came complaining of a sudden loss of voice of two months' duration, the aphonia being at first complete. Whispered phonation was possible in the morning, but was soon followed by fatigue and the voice went. The patient also complained of difficulty in swallowing, pains in the neck and shoulder, and weakness of the left arm.

Upon examination the head was found to be held obliquely ; on the left side the neck was flattened and the shoulder dropped. The head was rotated with difficulty to the right side, and the power of elevation of the left arm was found to be impaired. On closer inspection the usual outlines of the left sterno-mastoid and trapezius were lost ; this was due to a complete paralysis of the former, while the latter was paralysed only in its upper third ; its middle appeared to be paresed and its lower third healthy. Dr. John D. Comrie, to whom I am indebted for the examination of the thorax, reports: " . . . Lungs healthy ; heart somewhat enlarged and the aorta diseased at its beginning, as evidenced by a systolic murmur and an increase of the dull area in the second and third spaces. . . ." The urine was increased in amount, and contained 20.83 gr. of sugar in addition to a small amount of albumen.

The throat showed paralysis of the left side of the soft palate, larynx, complete recurrent paralysis of the left vocal cord, with feeble compensation of the right vocal cord upon attempted phonation.

I prescribed iodide of potash, along with appropriate diet for the patient's general condition, and upon examination a fortnight later the general condition was found distinctly improved, the voice a little stronger, swallowing quite normal, and, laryngoscopically, no alteration of the left vocal cord, but much better compensation on the part of the right vocal cord. The pain in the neck had gone, but the movements of the head, neck, shoulder and arm were as before.

Six months from the date of the patient's first visit to me I again saw her, and found her in apparently very good health.

Upon examination the urine is normal. The contours of the left side of the neck are completely restored, as are the movements of the head, neck, and upper extremity on that side.

The voice, although liable to fatigue after prolonged use, is clear and strong ; this is found, laryngoscopically, to be due to the very perfect compensation by the right vocal cord, while the left vocal is atrophied and lies fixed in the cadaveric position as before.

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## SOCIETIES' PROCEEDINGS.

## BRITISH MEDICAL ASSOCIATION.

*Annual Meeting, held at Belfast, on Friday, July 30, 1909.*

## SECTION OF OTO-LARYNGOLOGY.

DR. STCLAIR THOMSON, *President, in the Chair.*

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## DISCUSSION ON THE TREATMENT OF CICATRICIAL STENOSIS OF THE LARYNX AND TRACHEA.

THE PRESIDENT said that the Section was about to discuss a subject which had hitherto been the opprobrium of laryngology. The members would have the privilege of listening to the chief British authority, Dr. Lambert Lack; to two laryngologists from the land of O'Dwyer, Drs. Bryson Delavan and Emil Mayer, who would lay before them the results of their experience of intubation in the treatment of this intractable condition; and to Dr. Delsaux, of Brussels, who would describe to them the developments in the operative surgery of laryngeal stenosis which had recently been perfected on the Continent (*vide* p. 585).

DR. LAMBERT LACK dealt with laryngeal stenosis consequent upon diphtheria. Diphtheria by itself had no direct connection with stenosis, because, in every case that he had seen, a tracheal cannula inserted into an improperly situated opening was the evident cause of the condition. He had never seen it follow genuine tracheotomy. In all the cases one of the laryngeal cartilages had been divided and the tracheotomy tube lay within the confines of the larynx. He had also seen stenosis follow thyrotomy in childhood. All his cases had been less than five years of age. In most of the cases tracheotomy had been done in a hurry, with the result that the opening into the air-passage was made too high through the cartilages of the larynx. It was noteworthy and unfortunate that in the old text-books division of the cricoid was recommended in children. The degree of obstruction varied in accordance with the amount of inflammatory thickening.

In early cases a low tracheotomy should be performed and the cannula removed from the upper to the lower opening. In a few days or weeks the laryngeal obstruction would improve. Then the cannula should be blocked, at first temporarily and partially, then

permanently. The tracheotomy tube should not be removed too early, because, if the patient caught cold, urgent dyspnoea might come on, and the tube have to be re-inserted in a hurry. This treatment was successful in all early cases.

Among other methods he had tried thyrotomy and the excision of the scar-tissue from the larynx, fixing a solid plug in its cavity to maintain its patency during the healing process. He had tried T-shaped tubes for this purpose, but the difficulty was to keep them clean. The plug was worn six months, then removed and the tracheal cannula blocked. This had sometimes proved successful. Sometimes it had failed. He had finally concluded that whatever benefits he obtained were really due to time, and he had decided that it was illogical to treat laryngeal stenosis arising from a tracheotomy tube by inserting into the larynx another foreign body.

He had but little experience of intubation in these cases, but his experience had not been favourable. Children could not tolerate the passage of the tube. It was easier to pass tubes into the larynx from below than from above.

The severer forms of laryngeal stenosis had hitherto been regarded by himself as hopeless, but he anticipated that M. Delsaux would be able to lighten the gloom which had beset the prognosis heretofore.

Dr. Lack then proceeded to detail a few cases in which his methods of treatment had proved successful. One of these, an adult aged twenty-one, had had tracheotomy performed when four years old. The tube had been inserted through the right ala of the thyroid cartilage, and some destruction of the cartilage had in consequence ensued. A low tracheotomy was performed, the edges of the original wound were pared and united, no dilatation of the larynx was attempted, and in two months the patient went home cured.

Dr. BRYSON DELAVAN (New York) read a paper on "The Intubation Treatment of Laryngeal Stenosis." After a eulogistic tribute to the memory of O'Dwyer, the speaker went on to describe the modern operation as perfected by Dr. J. Rogers.

Most cases of laryngeal stenoses were due to hypertrophic laryngitis or to cicatrices. Adhesions in the larynx might be compared with adhesions between two fingers, or with synechiæ in the nose. Simple division of thin laryngeal webs was doubtless frequently quite successful, but incisions made into dense scar-tissue must of necessity re-unite. Mucous flaps, to take the part

in the larynx that cutaneous flaps took between the fingers, could not be cut without laryngo-fissure. Ultimate failure followed cutting operations. Treatment by intubation depended upon the fact that long-continued stretching destroyed the resiliency of scar-tissue (this was seen typically in laparotomy scars).

Two necessities in the intubation treatment required attention: first, that the shape of the tube must be adapted to the shape of the stricture—each case must have its own tube; and secondly, the intubation instrument must be large enough to stretch the contracted tissues without tearing them, and the stricture must be kept under continuous tension for at least a year, and sometimes much longer.

Patients tolerated the presence of the tubes with perfect ease, and children wearing them had passed through scarlet, typhoid, and even pertussis successfully.

The fitting of the tube to each special larynx required care. O'Dwyer, from casts of the normal larynx, made his tubes to fit loosely, but in stenosis the tube had to fit tightly, and in order to achieve this object the tubes, in the first instance, must be passed into the larynx under general anaesthesia.

Patients with hypertrophic laryngeal stenosis would cough up any tube, and might strangle if they did so. In them a low tracheotomy should be performed, and then, under full anaesthesia, the laryngeal tube inserted.

(Dr. Delavan exhibited tubes which had been made for special cases.)

In most cases a vulcanite tube was best; if it failed, a metal tube might succeed for some unknown reason. The objection to the metal tube lay in the fact that it became rough. When, at the end of a prolonged period of intubation, the tube was removed, spasm of the adductors was apt to occur, and give rise to the belief that the stenosis had not disappeared. Consequently, the first removal should be effected under an anaesthetic. If during recovery from the anaesthetic, the tube having been removed, dyspnoea slowly set in, the cause was not adductor spasm, and the tube must be re-inserted.

*The prognosis and duration of treatment* depended upon the nature of the stricture and the patience and skill of the operator. He had seen a case of hypertrophic stenosis cured in four weeks, but cicatricial stenosis might necessitate as many years. Hypertrophic stenosis, once it was cured, was not liable to recur. Time was an all-important factor. It was not yet certain whether, after

all, these strictures might not recur at some later date. The same criticism applied to other methods of treatment, particularly to those in which the laryngeal structures were damaged. The drawback to intubation treatment was its tedium.

Dr. DELSAUX (Brussels) described the operation of laryngostomy as developed by Sargnon and Barlatier.<sup>1</sup>

The operation was useful in all kinds of cicatricial stenosis, and as it had proved successful in some very unpromising cases, the prognosis of laryngeal stenosis had now become much less gloomy. In the case of tuberculous or lupoid disease, however, the operation was contra-indicated.

Thirty-six cases had so far been treated by this method, with the result set out in the following table :

No. of cases.	Cured.	Under treatment.	Deaths.	Unsuccessful.	Lost sight of.
36	14	12	6	1	3

Four of the six fatal cases died of broncho-pneumonia. In the solitary unsuccessful case the dilatation had been kept up for two months only. Consequently this had so far proved to be the most successful operation hitherto proposed. It could be resorted to as a final measure when other methods of treatment had failed.

Dr. EMIL MAYER (New York) said that too much stress had in the past been laid upon the difficulties of intubation. A very little practice would soon confer the necessary skill.

He described three unusual cases which he had treated by intubation with complete success. In one of these the introduction of the tube occupied ten minutes, and as the airway was necessarily blocked during the manipulation, he had constructed a hollow introducer to enable the patient to keep on breathing. The method of constructing a tube and fitting it with a tracheal cannula was then described. The intubation-tube having been inserted, and the edges of the tracheal opening anaesthetised with cocaine, a hot wire was inserted into the tracheal opening and made to burn the vulcanite intubation-tube *in situ*. Dr. Mayer described the case of a soldier with laryngeal stenosis, the result of a gun-shot wound. On examination, the larynx was found to be a funnel-shaped cavity terminating in a narrow slit. There was also a punched-out hole in the soft palate, produced by the same bullet that had injured the larynx. After a course of intubation the tube was removed, but re-insertion was found to be necessary. The patient, however,

<sup>1</sup> See JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxiii, p. 365.

declined further treatment in order to qualify for a Government pension.

The second case was one of perichondritis following typhoid fever. The onset of dyspnoea had necessitated tracheotomy. Intubation was successfully accomplished by Dr. Mayer, and the tube was worn for several months, in the course of which the patient took a trip from New York to Sweden and back. The case was now well.

In the third case laryngeal obstruction had been caused by a recurrent granuloma. The tumour had been removed, but the tracheotomy tube could not be dispensed with. Intubation was carried out, but the patient coughed up all the tubes until the Rogers' attachment was supplied. After wearing this for a month the stenosis was found to have been cured.

Dr. WILLIAM HILL (London) described a novel method of effecting laryngeal dilatation which he had originated. It was applicable only to cases where a thin cicatricial web had formed in the larynx. In the case treated by him there was a web reaching from the anterior commissure to the middle of the cords, and one cord was affected with recurrent paralysis. The patient was neurotic and declined intubation. Dr. H. Tilley, who saw the case with him, suggested and carried out division of the web, but it formed again. Thereupon Dr. Hill performed thyrotomy, removed the web, and rawed the margins of the cords. The new part of the treatment consisted in the insertion of an angled pair of Semon's laryngeal splints through the thyrotomy wound. Both cords healed in a fortnight, and the voice was restored. But the patient still persisted in wearing the tracheotomy tube. On the general question of laryngeal stenosis he suggested that these cases might be improved by the use of X rays and radium. It should be remembered that application of these remedies directly to the affected spot was unnecessary.

Dr. LOGAN TURNER expressed the thanks of the members to the readers of the introductory papers. Two different methods had been laid before them—the intra-laryngeal and the extra-laryngeal. The former had been followed up in America along the lines begun by O'Dwyer. The fact that the patient was compelled to wear a tube in the larynx for several years seemed to be a deterrent. He described a case under his own care of a cut-throat in whom the laryngeal stenosis was complicated with an oesophageal fistula. In treating such cases with tubes there was no doubt that the larynx had, at times, re-closed. Perhaps fibrolysin, the merits of which in disease of the ear had been praised at a former sitting, might prove of value in these cases.

Mr. HAROLD BARWELL (London) had seen a few cases of laryngeal stenosis. He had heard with interest that Dr. Delavan sometimes incised a laryngeal web. Schrötter's bougies had not been mentioned. He had had a case under treatment in which there was a cicatricial mass extending from the opening in the trachea to the level of the cords. In an effort to dilate the narrow lumen of the channel he passed Schrötter's bougies every day, and at the end of six months the tracheotomy tube was removed and the wound closed. This had taken place eighteen months ago, with no recurrence so far. He still occasionally passed the

bougie in order to maintain the dilatation. This, he thought, was a method of treatment where the interference was less than in the others. With regard to intubation, he understood that the tube had to be removed for cleaning every three or four days. This, if correct, would entail an amount of personal supervision which many would find it impossible to give.

MR. SCANES SPICER remarked that he was one of the first in England to use O'Dwyer's tubes. But he afterwards abandoned them. Recent improvements had, however, made them more useful. Laryngeal stenosis was either slight or very severe. Many cases yielded to a simple incision or to Schrötter, others proved quite intractable. He narrated two cases, one of post-typhoid perichondritis where all the methods of procuring dilatation, including intubation, were tried in vain, and the tracheotomy tube had to be continued; in the other case the obstruction was situated low down in the trachea opposite the sternum. The patient suffered from chronic dyspnoea, with acute exacerbations. The stenosis was cicatricial, and had resulted from a wound of the trachea produced by the sharp fragment of a fractured sternum. After a considerable time the speaker performed tracheotomy, and endeavoured to remove the web, but he failed and the patient died.

THE CHAIRMAN said that severe laryngeal stenosis was not a common condition, and it was fortunate that it was so, for the treatment, at the best, was difficult to carry out. He drew attention to the lessons which had emerged from the debate. One we owed to Dr. Lack, and that was that the removal of the tracheotomy tube from a high to a low position would meet the requirements of many cases. Another was that O'Dwyer's tube could be left in the larynx for a very long time. In England the use of O'Dwyer's tubes had hitherto been confined to the fever hospitals, where they were largely used and recommended as *the* thing. We had learned to-day that the tube could be left *in situ* for months or years without being changed. He had often, however, been asked to remove a tube by the hospital nurses on account of fœtor in the child's breath, and he wondered whether this was not also necessary in intubation for stenosis. A third lesson was the obvious uselessness of attempting to cure marked cases by laryngo-fissure and removal of the scar-tissue without anything more. Most rising laryngologists, he thought, had attempted to cure syphilitic stenosis in this manner and had failed. Fourthly, he fancied he could hear the death-knell of Schrötter's bougies ringing, in spite of Mr. Barwell's advocacy. O'Dwyer's tubes did all that Schrötter's bougies did, and did it better. Finally, he was cheered by the hopefulness of laryngostomy. Fourteen cures out of thirty-six cases was encouraging when one considered their great social importance. He narrated the case of a little girl who had for years been breathing entirely through a tracheotomy opening, as the larynx and trachea had wasted to the dimensions of a fibrous cord. All sorts of things had been tried, but nothing had been of any use. She was the child of poor parents in Drury Lane, and was a perfect savage, for she could neither read nor write. The rescue of a case like this by laryngostomy would be an act of great importance socially. He went on to describe another case resembling those mentioned by Dr. Lack, which exemplified the advantages of patience. It also was due to a tracheotomy, which had been placed too high. The adherent cords were divided and an intubation-tube passed into the larynx every week. The patient was in hospital for thirteen weeks and cost the hospital no less than £80. He was speechless when first admitted at the age of two years; but he could now speak and was



able to breathe with his tracheotomy cannula blocked. The cannula had not yet been removed. They could anticipate a further improvement in the case as the patient got older and his larynx developed. He asked Dr. Delavan what cases were suitable and what were not suitable for intubation; Dr. Delsaux, whether laryngostomy did not involve a long process of dressing, trying alike to patient and doctor. Did the epidermis line the trachea, or was the inside of the tube moist?

Dr. DELAVAN, in reply to the President, said that all cases of laryngeal stenosis were suitable for intubation except active tubercle and cancer. Everyone, he went on to say, was anxious to relieve these cases, and in one way their rarity was a misfortune, for the intubation treatment could not be taken up and learned from one case alone. Hence but few became expert. In New York they had one or two men to whom all their cases were referred. O'Dwyer and Rogers had expended infinite care and expense. It was one of the difficulties of the situation that most of the patients were poor people, who could never repay the time and trouble, to say nothing of the instruments, spent upon them. It was interesting to hear the opposite types of treatment. Holding fast, as he did, to the principle that the least injury possible should be done to the parts, he thought that cutting operations should be avoided. In spite of that, however, he freely admitted that the new operation offered many advantages over the old. He was still anxious to find something new and effective. Inasmuch as we could not be sure of the ultimate result of these different methods until many years had elapsed, we were not yet in a position to say which was the more desirable.

Dr. DELSAUX, in reply, said that the dressing after the operation had to be continued for a month or six weeks. The removal of the scar-tissue lessened the time necessary for dilatation. The skin lining the new passage became moist, as it does at the lip. The function of the plastic operation was to re-constitute the cavity of the larynx.

Mr. R. H. SCANES-SPICER read a paper on "Cancers of the Throat; Observations on the Sites of Origin, Pathogeny, Early Diagnosis, and Radical Cure," illustrated by a model of the larynx, showing the effect of various physical forces upon the organ. He argued that the position of the larynx during faulty abdominal breathing was a factor in the causation of laryngeal cancer.

Dr. DELAVAN alluded to a recent suggestion by Chiari that the various types of laryngeal cancer should be more accurately differentiated than had hitherto been the case. There was an absence of a clear appreciation of laryngeal cancer, low cases of favourable prognosis being placed in the same category as the most virulent varieties.

Dr. Woods (Dublin) exhibited a patient whose larynx had been extirpated, and whom he had supplied with a *new and simple vocalising apparatus*. The apparatus consisted of a rubber tube containing a reed at one end. The end with the reed was passed through the nose into the pharynx, and the other end was placed in the tracheal opening. The resulting "voice" was wonderfully clear and distinct.

THE CHAIRMAN remarked that the difficulty in these cases was to induce the patient to use the artificial voice. Most of them soon learned to phonate by means of the pharynx.

Dr. DELAVAN congratulated Dr. Woods in having devised a most ingenious and perfect instrument. It had the great advantage over other instruments made for the same purpose in not irritating the tissues.

Mr. SCANES-SPICER asked if anyone had tried the plan of making a fistulous opening through the cheek.

A paper on "The Surgical Anatomy of the Tonsils," by Mr. J. HARDIE NEIL (New Zealand) was read by the SECRETARY, in which the author contended, as a result of his anatomical investigations, that the "supra-tonsillar fossa" lay within the capsule of the tonsil, in opposition to Drs. Patterson and Watson Williams, who hold that the fossa lies in the alcove outside the capsule.

## AUSTRIAN OTOLOGICAL SOCIETY.

January 25, 1909; *Monats. f. Ohren. und Laryngo-Rhinol.*, year 43, vol. 5.

PROFESSOR URBANSCHITSCH *in the Chair.*

*Abstract of the Proceedings.*

### TWO NEW TUNING-FORK TESTS.

By DR. BÁRÁNY.

THE first was in respect to the diagnosis of impaired sound-conduction.

(a) *Condition in Normal Ears.*—If one gently applies a strongly vibrating tuning-fork to the inferior portion of the mastoid process the note will only be heard quite faintly. (Any tuning-fork will do except that in the case of the high notes, C4 for instance, the handle must be long enough so that the note is not heard by air conduction.) If the handle of the fork is now firmly pressed against the posterior surface of the pinna the note sounds much stronger. This reaction he describes as "positive." In addition the sound becomes intensified if the meatus is closed—as indeed occurs when the fork is applied to the mastoid process in the ordinary way under similar circumstances.

(b) *Condition in a Case of Middle-ear Disease.*—The result to this test now is "negative," that is, the note will be heard much

more loudly when the fork is only gently applied to the mastoid process than when it is even firmly pressed against the pinna. With only a slight impairment to sound-conduction the result to the high and middle tones may be "positive" or the note may be heard equally in both positions, but with the deeper tones the reaction is "negative," and if the meatus be closed the reaction to tuning-forks of all tones is "positive," whilst if a medium depreciation of sound-conduction exists the result will be "negative" for all tones with the ear open and "positive" with the meatus closed. Lastly, in the case of a marked impairment to sound-conduction the result becomes "negative" for all tones whether the meatus be closed or open. The reason of this varying response is due to the fact that in cases of obstruction to sound-conduction the note almost always is heard more loudly if the fork is pressed against the pinna with the meatus closed, whilst if the fork is applied to the mastoid process closure of the meatus results in an increase of the note only in those cases in which the impairment is trifling. When there is a strong obstacle to sound-conduction the note will be unaltered by closure of the meatus. The test is impracticable in cases where a severe lesion of the inner ear co-exists with middle-ear disease, as, of course, the function of hearing itself is affected, but under these circumstances the following additional test with the otoscope forms a valuable assistance:

The ear of the observer and that of the patient are connected by means of an otoscope in the ordinary manner. In cases where no impediment to sound-conduction exists the report of the patient as to the intensity of the note accurately corresponds with the observer's findings, that is, for each the sound varies directly in accordance with the pressure and position of the handle of the tuning-fork, and if this correspondence to the test takes place with all tuning-forks the existence of even a very slight impairment of sound-conduction may be thus excluded. If, however, the sound-conduction be affected, then the observer will hear the note better when the fork is applied to the pinna, whilst the patient will hear it more strongly when the fork is applied to the mastoid process, and the greater the affection of the sound-conduction the more pronounced will be this discrepancy. In instances of quite trifling impairment of sound-conduction, which are not appreciated if the meatus be open, the patient may hear the note from the mastoid more strongly, whilst the examiner can detect no difference between the note from the mastoid and that from the pinna; and when a marked obstruction to sound-conduction exists the patient hears

the note from the mastoid alone, whereas the observer hears the note from the pinna and can hardly detect that from the mastoid.

Bárány lays down the following precautions which should be adopted in applying this test:

The handle of the fork must be set on the lower half of the mastoid process always, as the position of the antrum is not constant, and if it be abnormally low the result may be "negative" in normal cases.

The pinna must not be pressed too far forwards so that the meatus becomes occluded.

One must avoid touching the pinna either with the fork or with the hand supporting it when it is applied to the mastoid, otherwise sound-conduction may occur by cartilage and bone simultaneously.

Patients with a high degree of deafness may confuse the "feel" of the vibrations with the note of the vibrating fork. In these cases the note will not be appreciated by air-conduction, and Bárány states that in his experience cartilage-conduction of sound is always less than air-conduction, so that he considers this fact will also serve to decide as to whether the patient is really hearing the note or confounding the sense of hearing with that of touch.

It is also important not to touch the otoscope with the arm holding the fork, and the instrument must accurately fit both the ears of the patient and the examiner.

Bárány claims that his test is more valuable than Rinne's, since it will detect affections of sound-conduction which are unrecognisable by Rinne's test, that it is more easily carried out in a crowded and perhaps noisy clinic, and that in the case of children one is not dependent on a possibly inaccurate report. Great help also is afforded as regards treatment and prognosis; for instance, if one is dealing with a case of secretorial catarrh and the response to the test is "negative" when the ear is either closed or open, whilst after politizerisation the result becomes "positive," one is able to give a favourable prognosis without the trouble which testing the range for hearing entails in a large clinic, although, of course, he would not wish to advise the omission of the latter test. Also, in cases of chronic deafness, one is able by this means to corroborate the opinion formed as the result of catheterisation; for example, if, before catheterisation, the response to Bárány's test is "negative" either with the ear open or closed, whilst after the inflation it is "positive," at any rate when the ear is occluded, one can say that treatment will probably effect some improvement.

Bárány also demonstrated a NEW METHOD OF TESTING THE DURATION OF BONE-CONDUCTION.

As he had already pointed out in describing his previous test, both the exact point of application and also the pressure with which the fork is applied is of considerable importance, and these become of even greater moment when one wishes to obtain a true comparison between the conduction capability of the patient and that of the observer. To avoid the possibility of error in this respect the ears of the patient and observer are connected in the ordinary way, and a vibrating fork is then applied to the mastoid process of the patient (the exact point of application and the pressure is now unimportant). In normal cases the patient and examiner will each hear the note equally, or in isolated instances the person under examination will hear it longer than the observer. In cases of middle-ear disease the patient will hear the note longer than, or just as long as, the observer in nearly every instance, and thus an affection of the auditory nerve can be absolutely excluded in these instances.

Other cases, however, of middle-ear disease which had shown a lengthening of bone-conduction to the ordinary inaccurate test, by his method were now found to have a shortened bone-conduction. Now it sometimes happens that, in carrying out the test for the duration of bone-conduction in cases of middle-ear disease, the patient will hear the note more faintly when the meatus is closed; in testing these cases Bárány removed the otoscope from the patient's ear directly the note was no longer heard, and in a few instances the sound was then heard some seconds longer; then, when the note was again lost, the otoscope was once more inserted but the patient was now unable to recognise it. In these cases, therefore, no internal ear disease existed. If, on the contrary, when the otoscope was re-inserted the patient heard the note again, some complicating affection of the internal ear undoubtedly was present, although the bone-conduction according to the old method was lengthened. The accuracy of these observations is supported by the result of the investigations of Dr. Kipróff on the vestibular apparatus in cases of chronic purulent disease of the middle ear, which showed that the caloric nystagmus was shortened in such cases. This shortening is only to be explained by the simultaneous involvement of the vestibular apparatus, and this new method of testing the duration of bone-conduction also pointed to the fact that in both acute and chronic purulent disease of the middle ear the function of the cochlea also was more or less affected. When an undoubted lesion of the inner

ear existed the patient always heard the note for a less period than the examiner by this test. One-sided deafness of course could not be diagnosed by this test, since the sound ear can not be excluded as regards bone-conduction, but in these cases one always obtained the report from the patient that the bone-conduction was shortened on the diseased side.

Bárány would not commit himself to any theory as to how the sound-waves were conducted from the cartilage to the inner ear, and suggested that an expression of opinion on this point should be reserved till other observers had had the opportunity of employing the test.

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*February 22, 1909; Monats. f. Ohren. und Laryngo-Rhinol., year 43, vol. 6.*

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PROFESSOR URBANSCHITSCH *in the Chair.*

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*Abstract of the Proceedings.*

FURTHER TESTS WITH THE TUNING-FORK.

BY DR. BÁRÁNY.

The first consisted in a modification of Rinne's test, which he claimed was by his method both improved and simplified.

The ears of the patient and observer are connected in the ordinary way by means of an otoscope, and the handle of a vibrating fork is applied to the otoscope and then to the mastoid process of the patient. If, now, the case is one in which the meatus is normal or the internal ear alone is affected, the patient's report as to the note is in complete accord with the observation of the examiner, that is to say, if the examiner hears the note louder when the fork is applied to the mastoid process than when it is applied to the otoscope—or *vice-versá*—the patient reports the same variation. (Variations in the intensity of the note may be easily produced by setting the fork on different parts of the hand which holds the otoscope.) Thus the appreciation of the note varies as regards bone-and air-conduction as it does in Rinne's test, and the value of Bárány's modification lies in the fact that thereby we are able to satisfy ourselves that, for instance, a "negative" report is due to a pathological lesion and not to an alteration of physical conditions.

The second test concerns the comparison of the note from the otoscope with that from the pinna under conditions similar to those of the first test.

In normal cases the sensations of both the patient and the observer correspond as to the note, but in instances of impairment of the sound-conducting apparatus it not infrequently occurs that the patient hears the note louder from the pinna, whilst the examiner hears it more loudly when the fork is applied to the otoscope.

The correct inference and importance which should be attached to this test B said was yet to be ascertained ; but, as far as his experience hitherto showed, it appeared that these tests only afforded the same results as those which he had brought forward at the previous meeting, and it was apparently indifferent which were adopted.

Drs. FREY and NEUMANN subjected B's tests to severe criticism, and submitted that they afforded little if any advantage over those methods usually employed. Both speakers regarded B's communications as most interesting in many respects, but from a practical point of view were not at all disposed to adopt the new tests in preference to those with which they were more familiar.

The report of the proceedings rather gives the impression that the audience were not really prepared to express an opinion on the subject, as the matter was only discussed by these two members, who do not appear to have had the opportunity of basing their remarks on any large series of cases.

B, in reply, very stoutly defended his position, and contended that his methods would be found superior to the tests already known when aural surgeons had had further time to investigate them and note the results obtained in comparison with the data which the older methods afforded.

#### MELANOTIC SARCOMA OF THE BULB.

By DR. NEUMANN.

The specimen had been obtained from a patient who had been operated on five years ago in Schnabel's clinic. It consisted of a melanotic sarcoma of the bulb. For four years after the operation the patient enjoyed good health, but then became deaf in both ears and lost his vestibular excitability. Neumann had had the opportunity of observing this patient from the onset of this aural

affection right up till his death, the result of suicide. It was especially interesting that this patient never had any nystagmus or giddiness, although his equilibration was seriously affected. These facts corroborated the view already expressed by the exhibitor to the effect that disturbances of equilibration, vestibular in origin, may exist without the occurrence of either of these other two phenomena, which are much more often the cause of the unsteadiness rather than its result. As regards the autopsy, no further light was thrown on the cause of the condition, except that a few small metastatic deposits were found on the arachnoid. The facial on both sides was intact. He was obliged to admit that the case did not show any definite reason for supposing its origin to have been either wholly peripheral or central.

ALEX. R. TWEEDIE.

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## PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

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*Fifteenth Annual Meeting.*

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DR. CHRISTIAN HOLMES (*Cincinnati*), *President, in the Chair.*

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*(Continued from page 578.)*

### LOCAL ANÆSTHESIA IN THE MASTOID OPERATION.

BY DR. EWING W. DAY (Pittsburg, Pa.).

It has been the author's experience that patients who are partially anæsthetised for the mastoid operation give no evidence of pain while the bone-work is in progress, but immediately struggle and moan, or cry out when the soft parts are being operated upon. The problem of local anæsthesia in the mastoid operation, therefore, narrows itself down to anæsthesia of the soft parts, including the periosteum. Upon investigating the literature of the subject he found that Neumann demonstrated upon rabbits that injections of violet-coloured solutions under the periosteum over the frontal sinus of rabbits was followed by penetration of the solution through the bone to the lining mucous membrane, and that he applied the results of his experiments to the mastoid operation.

After employing local anæsthesia in a number of cases where



general anæsthesia was contra-indicated, the author found it to possess so many advantages that he had been led to apply it to many cases in which there was no contra-indication to general anæsthesia. Fully ten minutes of time are saved in acute cases, and twenty in radical operations, in the actual performance of the operation, not including the time saved in the anæsthesia itself. Another great advantage is the lessened discomfort, and especially the freedom from nausea experienced by the patient after operation, which is most appreciated by those who have previously taken a general anæsthetic.

The technique employed is a slight modification of that followed by Neumann. A 1 per cent. cocaine solution, with the addition of about a drachm of adrenalin solution to the ounce, is used, the quantity employed being one to two drachms. An ordinary hypodermic syringe is best for the skin-surface, while for the subperiosteal work a heavier one, such as an antitoxin syringe, is used. After making the superficial injection along the line of incision, the injection is made under the periosteum three quarters of an inch behind the auricle, and also into the tendon of the sternomastoid muscle. An injection is then made under the periosteum of the canal. It is sometimes difficult to secure anæsthesia of the canal because of the escape of the fluid from under the periosteum at its inner end. Anæsthesia should be sufficient in five minutes to begin operation. The method is the same for the radical operation, with the additional application with a cotton swab of cocaine crystals to the Eustachian orifice. Normal salt solution is used for irrigation through the antrum.

Of a series of forty-four cases reported in the paper, in only one was there any difference in healing as compared with cases operated upon under general anæsthesia. In all the radical operations there was primary union. In one case there was slight necrosis of the soft tissues, but whether due to the infiltration or not it was of no consequence; the healing was not long delayed, and the result was perfect. In two cases there was œdema of the face, and in another there was a mild cellulitis of the neck; but these could not be attributed to the anæsthesia. With one exception the anæsthesia was sufficient to perform the operation with but slight pain, and in some instances there was absolutely no pain. Forty-four mastoidectomies in thirty-nine individuals—thirty-five for simple mastoiditis, nine radical operations—were performed. The sinus was explored twice and the cerebellum once. The patients ranged in age from five years up.

Dr. EDWARD B. DENCH had never employed local anæsthesia. For the purpose of controlling hæmorrhage he had used subcutaneous injections of adrenalin, stronger than Dr. Day recommends, and had had sloughing afterwards. The work reported by Dr. Day marked a distinct advance in otological surgery.

Dr. J. A. STUCKY heartily endorsed the method described by Dr. Day. He had tried it three times with varying degrees of success. The degree of anæsthesia had a great influence upon the ultimate result of operations upon the mastoid and brain. He had frequently done a radical mastoid operation with  $1\frac{1}{2}$  oz. of ether. The average otologist, and the average surgeon as well, gave too much ether. As Dr. Day had said, the painful part of the operation was in the middle ear; therefore in all radical operations it was his custom to do the middle-ear operation first, after which only enough ether was given to keep the patient quiet. He had adopted mixed anæsthesia, especially in neurotic individuals, putting the patient pretty well under the influence of an opiate before giving the anæsthetic. The personal equation played an important part in the work presented by Dr. Day. The point would finally be reached when these operations would be done under modified anæsthesia, and the method advocated by Dr. Day would be generally adopted. In this connection he called attention to coffee as an ideal stimulant.

Dr. THOMAS J. HARRIS had had no experience with the infiltration method in operating upon the ear, but it had been his favourite procedure in operations in the nose. The method as described by Dr. Day appealed to him very strongly; at the same time he wished to call attention to the possibilities of danger from its use. He referred to a case in which he had employed it in a healthy adult of thirty for the enucleation of the faucial tonsils. The patient died in three minutes, and it was found upon *post-mortem* examination that there was a *status lymphaticus*, the thymus gland weighing 18 gm. The right heart was greatly dilated. All indications pointed to thymic asthma, but the adrenalin was the causative factor. A similar case had been reported by Dr. Thomas Hubbard. There was no *status lymphaticus*, but a submucous resection was done, and the patient died on the operating table. A one fifth of 1 per cent. solution of cocaine to the amount of  $\frac{1}{12}$  gr., and 8 to 10 m of 1 : 1000 adrenalin, were used.

Dr. JAMES E. LOGAN emphasised the value of adrenalin for clearing up the field of operation in general anæsthesia. He had never used the hypodermic injection of cocaine as suggested by

Dr. Day, and thought that in his hands he would prefer general anæsthesia unless it was contra-indicated.

Dr. NORTON L. WILSON said cocaine was being used in very much milder strengths than formerly, and the same should apply to adrenalin. One to seven or ten thousand was quite strong enough for obtaining the hæmostatic effect.

Dr. JOHN F. BARNHILL said he had always been very much afraid of cocaine when injected under the skin or mucous membrane because of an unpleasant personal experience in the early history of the drug. In the past three years he had used alypin,  $1\frac{1}{2}$  to  $1\frac{1}{2}$  gr., several hundred times without any ill-effects, and with perfect anæsthesia. Adrenalin, in 1:10,000 or 1:15,000, when injected under the skin would give about the same effect as 1:5000, so that it was not necessary to use it in the strengths referred to by the previous speakers. It was possible that the psychical effect had something to do with such cases as those mentioned by Dr. Harris.

Dr. CHARLES GRAEF said that some years ago this matter was discussed at the New York Academy of Medicine, and one of the surgeons present emphasized the value of morphine as an antidote to cocaine. Experiments had been made with pigeons, some of which were injected with morphine and then with cocaine, while others were given the cocaine without the morphine. The latter class died. The speaker had used morphine with cocaine for a number of years, and had never had a death.

Dr. LEE M. HURD cited the case of a young woman upon whom he operated under local anæsthesia, using one tenth of 1 per cent. cocaine with adrenalin. The whole middle ear became absolutely anæsthetic. He crushed out the external attic wall, doing almost a Stacke operation in the office, and when it was finished the patient said it did not hurt in the least. Patients were more apt to succumb before than during the operation.

Dr. DAY, in closing the discussion, could not understand why anyone should be afraid to undertake the operation under local anæsthesia. It was not necessary to use cocaine. The important factor was the pressure, and this could be obtained just as well with normal salt solution. He did not agree with the other speakers concerning the importance of the personal equation, nor did he believe that a patient could be talked out of real pain. He had never had sloughing that he could directly attribute to the injection. He did not advocate the use of adrenalin in such strong solutions as had been mentioned. The tube was the only place

where it was impossible to get anæsthesia from the injection, and here he put in cocaine crystals. It was important to get under the periosteum. When the bone was reached the needle should be inserted so that the point was not the pivot point; it should be given a one-quarter turn, the point lifted up and then inserted under the periosteum. When once under the periosteum the fluid could be injected.

#### LIPOMA OF THE LARYNX.

BY DR. MAX A. GOLDSTEIN.

The ætiology and pathology of lipoma of the larynx has been obscure, and but little definite data can be obtained concerning it. In the case of lipoma of the larynx reported, the microscopic findings as recorded by Dr. R. L. Thompson, and the description of the pathological examination as furnished by Dr. Jonathan Wright, afford a new basis for the consideration of the ætiology of this neoplasm in the larynx.

In order that a complete monograph of this subject might be presented the author collected and carefully recorded in detail all of the cases of lipoma of the larynx that have been reported in medical literature.

The paper concerned itself especially with the report of an unusual case of lipoma of the larynx in an adult female patient. The location of the tumour, the laryngoscopic picture, both by direct and indirect examination, the symptoms produced by this large mass, which almost filled the lumen of the glottis, the diagnosis and differential diagnosis, the operation for the removal of the tumours, the details of technique, the after-treatment, the present appearance of the larynx, and the restoration of the voice and normal respiration were fully described.

A complete pathological report of the tumour was given, together with the reports of Drs. Jonathan Wright and R. L. Thompson.

#### THYROIDECTOMY.

BY DR. GEORGE F. COTT.

The attention of the laryngologist is frequently called to the peculiar symptoms produced by the diseased thyroid gland. These symptoms are local or constitutional, acute or chronic. The kind,

shape, and situation of the gland varies considerably in different patients. It may be submaxillary, extending even to the mastoid, substernal, intra-thoracic, or diffuse, covering the front of the neck. In considering the question of treatment Kocher, who has operated upon more than 3500 cases, claims that 90 per cent. get well without the knife. When measures other than surgery are adopted it is necessary to treat some cases for weeks and others for months before much improvement takes place. All cases of goitre are not amenable to operation, such, for example, as retrosternal and intra-thoracic goitres and those producing exophthalmia when the heart is much involved.

Dr. B. R. SHELLEY considered hyper-thyroidism one of the most interesting subjects in internal medicine. The general practitioner did not realise how frequent are the atypical conditions of the thyroid and how many of these patients consult the laryngologist suffering from symptoms in the region of the larynx. A great deal could be done for hyper-thyroidism by medicinal measures, and the operation of thyroidectomy should be approached with hesitancy. Ninety per cent. of the cases would be improved by the administration of iodine, by electrolysis, and by the internal treatment which Rogers, of New York, had so successfully brought before the profession, that is, by the hypodermic administration of the antitoxin of his own preparation. Every effort should be made to give the patient relief by measures other than surgery. It should be remembered that these glands are sometimes very small, and that small glands may give rise to symptoms out of proportion to their size. Some cases of hyperthyroidism would improve after complete tonsillectomy. The majority of these cases were in women, the proportion being 11 to 1. When thyroidectomy was resorted to the most successful procedure was the removal of the gland and the ligation of the superior thyroid artery on the other side.

Dr. WILLIAM L. BALLENGER reported a case upon which he operated a year ago, in which operation was followed by death. He removed the goitre, which was not a very large one, and the wound remained perfectly dry for a week, neither granulating nor suppurating. At the end of one week there was a severe hæmorrhage at midnight, which was checked by compression applied by the nurse. The following night at twelve o'clock, and every night at that hour for a week, there was another hæmorrhage. The point of hæmorrhage could never be located, but it seemed to come from the base of the skull rather than from the thyroid wound.

The vessels from which it was supposed to come were tied off, but the hæmorrhage occurred each night.

Dr. JOSEPH H. ABRAHAM, referring to the prognosis of carcinoma of the thyroid gland, cited the case of a woman, aged thirty-eight, in whom the trachea was markedly pressed upon by a carcinoma of the thyroid and the dyspnœa was very great. She was operated upon, with relief of the dyspnœa, but she died at the end of twenty-four hours.

Dr. COTT, in closing the discussion, agreed with Dr. Jackson concerning the value of tracheo-bronchoscopy, and suggested also œsophagoscopy. The amount of irritation produced in Graves' disease would be apt to make the patient worse. In a case where there was reason to anticipate secondary hæmorrhage all vessels should be carefully ligated with silk. If the walls of the vessels are degenerated, or if they are crushed in handling, hæmorrhage would result. In Kocher's classical memoir on the subject 1453 references since 1870 were given, which shows the enormous progress made the latter part of the last century, very little having been accomplished before that time.

#### LARYNGOSTOMY.

BY DR. CHEVALIER JACKSON.

Laryngostomy, the name given to the surgical procedure of laying open the larynx anteriorly and keeping it open for a long period of treatment, was first employed by Ruggi in 1898 for the treatment of cicatricial and papillomatous stenosis of the larynx. The author has employed the method with success in five patients. The T-shaped cannula was used. In two cases the stenosis recurred. Killian, in 1906, demonstrated a vastly better method by post-operative dilatation. This gave laryngostomy a permanent place in the surgery of the larynx. Killian also used a T-cannula, but it was made of soft rubber, and was used in successively increasing sizes for dilatation. The operative details have been further elaborated by various other laryngologists. The procedure is indicated in chronic laryngeal stenosis without too great deformity of the bony box. It has been applied to papillomatous stenosis as well as cicatricial. It is contra-indicated in the presence of pyrexia, active lues, and bronchial and pulmonary disorders. For the post-operative dressings soft rubber tubing, evenly graduated in sizes from fifteen to forty French scale sizes,

is employed. Local infiltration anaesthesia is recommended, except in the youngest and most uncontrollable children.

The results from the author's cases are as follows: One is still under treatment; four were cured by laryngostomy without dilatation; two recurred, and were afterwards cured by Killian's method.

Dr. WILLIAM L. BALEXGER had recently seen a case in which this operation was undoubtedly indicated. The patient had accidentally used 60 per cent. carbolic acid as a gargle. Partial stenosis resulted, and he is wearing a cannula in the neck.

Dr. J. A. STUCKY referred to a case, previously reported, in which he had removed half the larynx, which had remained well, with fairly good voice. He had seen Dundas Grant operate upon a case similar to those described by Dr. Jackson. The patient was a child five years of age. It had worn a tracheotomy tube for a year because of complete closure from cicatricial laryngitis. The three upper tracheal rings and the larynx were entirely closed. Grant succeeded, after prolonged effort, in passing a small probe. The operation required one and a half hours. He could use no scissors, saw nothing to guide him except this little probe. The after-treatment consisted in packing the wound wide open, with the hope of getting cicitrisation. The patient was doing very well when the speaker left London. If at that time he had known of Dr. Jackson's method he would have suggested it to the operator. He proposed to try it in future.

#### LARYNGEAL PARALYSIS AS AN EARLY INDICATION OF SYSTEMIC DISEASE.

By Dr. GEORGE T. ROSS.

Many phases of laryngeal palsy are obscure, and require further pathological investigations from the cortex to the nucleus, and from the nucleus to the periphery.

The importance of recognising the earliest paretic state of the larynx is pointed out, and the necessity for searching for it even where no symptoms point to that organ. The problem of such paresis being of slight importance, though long-continued, as in pressure from a lymph-gland, or the forerunner of serious condition as in *tabes dorsalis*, spinal or bulbar disease, was discussed.

Three cases were cited—two of unilateral palsy, without sensory symptoms, and one bilateral, with sensory symptoms, preceding *tabes* for six to ten months, laryngitis being absent. Also three cases by Rosenberg, of Berlin, of unilateral palsy, occurring in

acute and chronic laryngitis, lasting three, eight, and thirty-two months respectively. The difficulty of formulating reliable prognosis was discussed.

#### NASAL MYO-SARCOMA IN A CHILD, AGED THREE.

By DR. GEORGE T. ROSS.

E. L.—, a French-Canadian child aged three, had obstructed nasal breathing for six weeks. No history of injury or hereditary cancer. Child well nourished, though anæmic; no cough; voice, “nasal” in tone; nose-bleeding frequent. Examination: Right nares practically normal; left naris had the vestibule blocked with a greyish-yellow mass, soft, friable, covered with pus, encapsuled and bleeding at the slightest touch, no fœtor or excoriation. There were no adenoids or hypertrophied tonsils. Operation: Intra-nasal, with forceps, scissors, and electric cautery. Growth found attached to septum at junction of bone and cartilage. Hæmorrhage severe. In two weeks recurrence evident, but of smaller size. Operation repeated four times, with intervals of two or three weeks. The growth was found to be less each time. Last operation on November 30. Pathological report: A myxoma which had undergone sarcomatous transformation. May 1, 1909, child examined. Left naris normal except scar-tissue on septum. Parents say he is now perfectly well.

Dr. B. R. SHURLY called attention to the frequency of bronchial gland enlargement and the importance of laryngoscopic findings in the class of cases referred to in the first paper read by Dr. Ross. It had been estimated that in 70 per cent. of the cases of *tuberculosis dorsalis* there is a specific history. In the majority of these cases glandular enlargement might be anticipated anywhere, especially along the bronchial tree. Many laryngeal paralyses cleared up under treatment with iodide of potassium.

Dr. Ross, in closing the discussion, called attention to the reflex action of the spinal accessory nerves in relation to irritation of the pharyngeal plexus as bearing on the still disputed question of the motor nerves supplying the larynx and pharynx, and referred to some clinical evidence he had recently, wherein the reflex action of the spinal accessory was predominant.

#### THE EARLY DIAGNOSIS OF MALIGNANT DISEASE OF THE LARYNX— PATHOLOGY, PROGNOSIS, AND TREATMENT.

By DR. WALTER F. CHAPPELL.

Continued hoarseness is not given the attention it deserves by



either the patient or the physician. This state of affairs is largely due to the inefficient teaching of laryngology in medical colleges.

Cancer of the larynx represents about 1 per cent. of all carcinomata in general, and its diagnosis in the early stage is conceded by all writers to be especially difficult. According to Semon, not one single sign in the early stage of malignant disease of the larynx is in itself so characteristic that it establishes with absolute certainty the malignant nature of the growth. The early recognition of the disease is possible in the majority of cases with the assistance of the laryngoscope, Sendziak holding that in most cases it may be diagnosed exclusively on the basis of the laryngoscopic picture, without resorting to the microscope. Certain contributory evidence, such as heredity, may be considered in arriving at a diagnosis.

For convenience of description the author considered the subject under the usual divisions of intrinsic and extrinsic cancer, discussing the questions of location, symptomatology, and diagnosis of each class of cases. Referring to the microscopical examination of sections of malignant growths of the larynx as an aid in diagnosis, the author held that if the report is positive as to malignancy, taken with the clinical symptoms, it could be safely assumed that a malignant tumour is to be dealt with; if, on the other hand, the clinical signs and appearances did not support the microscopical diagnosis, he would consider the clinical picture much the more important guide in the matter of treatment. He has had a number of cases, some of which he cited, where several examinations of sections of the tumour were made by different observers, all of whom gave a positive diagnosis of laryngeal cancer, and where clinical symptoms and subsequent history proved them to be wrong. In view of the constantly increasing evidence of the total unreliability of the microscope alone as a means of diagnosis in cancer of the larynx, it is probable that some of the so-called complete cures were in reality not cancer at all. Clinical cancer of the larynx is always serious, but a "microscopic cancer" may give a more favourable prognosis. Various degrees of malignancy, heredity, the original site of the growth, age of patient, early discovery, and the nature of the treatment, all have a bearing upon the prognosis. When a positive diagnosis of intrinsic cancer of the larynx is made, operative measures are the only means which should be employed. Thyrotomy is suitable when the growth is limited to the vocal cords or the soft parts of the interior of the larynx. In regard to post-

operative security from recurrence, thyrotomy is nearly equal in value to laryngectomy, whereas the safety of the operative intervention as such renders it infinitely superior to total or even partial resection of the larynx. Exploratory thyrotomy is justifiable in a suspicious case, though Jackson's tubes have removed the necessity for exploratory measures in the majority of cases. In extrinsic cancer of the larynx in a patient under fifty-five years of age, when the tumour has been discovered early, total extirpation of the larynx is indicated, excepting when the new growth is confined to the epiglottis. From the point of view of recurrence this procedure is superior to all other measures. The author does not advise total extirpation of the larynx in patients over fifty-five, even in early cases.

Professor CHIARI agreed with the proposition that the diagnosis should be made by clinical as well as microscopical examination. In every suspicious case he gave a section to a competent pathologist for examination, and in no instance had he found it necessary to contradict the pathological diagnosis. In many instances the report had come that the tumour was not malignant, but that it was suspicious, and in such cases he always waited before operating. In many cases the diagnosis was very uncertain. The differential diagnosis between syphilis and cancer is very difficult. He cited two illustrative cases which had come under his observation. The first, a man, aged fifty, had been hoarse for two months; he had stenosis of the larynx and could not breathe. He had been to an excellent laryngologist, who pronounced the condition due to cancer of the larynx and recommended immediate operation. The speaker found, upon examination, that there was inflammation of the subglottic space on either side. Cancer never begins on both sides of the larynx. In this case both subglottic folds were of the same dimensions. Believing it to be subglottic gumma the patient was put upon potassium iodide, and in two weeks he was much better. In the second case the patient, a physician, had been told that he had cancer of the epiglottis. The epiglottis was found to be ulcerated and surrounded by papillary infiltration, and on the left arytenoid there was a small area of ulceration and infiltration. The mobility of the vocal cords was quite good. From these clinical appearances the speaker judged the condition to be non-malignant. He extirpated some of the papillomatous tissue around the ulcer and gave it to one of his younger assistants for microscopic examination. It was pronounced malignant. But when Prof. Chiari examined the microscopic preparations he found that it was pachydermia. The patient

recovered entirely under anti-syphilitic treatment. When a reliable pathologist returned the diagnosis of cancer it was his custom to perform the external operation. When a negative pathological report was given he waited until the clinical symptoms warranted operation. He had not had the same experience as Dr. Chappell with the radical operation. He had performed total extirpation in patients more than fifty-five years of age, and Glück had operated in many such cases with perfect success. It was true that a patient without a larynx was a pitiable object, but many of them learn to speak quite well. Glück had demonstrated that they learn to speak with the pharyngeal voice. One patient, a man, could be distinctly heard in a large room. Part of the œsophagus, the tongue, and part of the thyroid gland had also been removed and the patient had a large fistula, and yet he could speak quite well, he could swallow, and seemed content to live. In such an unfortunate condition as cancer of the larynx one was not only allowed but perhaps obliged to do a radical operation, but the patient should be informed of the consequences of such an operation, of the necessity for wearing a cannula throughout the remainder of life, and of having to learn to speak.

Dr. GEORGE F. KEIPER thought the laryngologist responsible for some of the pathological reports being so indefinite. As a rule, when it was desired to remove a part of a growth for examination the tendency was to bite off the most prominent part, whereas a portion of normal tissue adjacent to the growth should also be submitted in order that the pathologist may see the difference between the normal and pathological structure.

Dr. GEORGE F. COTT said Mackenzie claimed that the diagnosis of malignant disease of the larynx should be made upon clinical examination. For this statement Sir Felix Semon took him to task. The speaker did not believe it safe to wait for the clinical diagnosis, but also used the microscope. He mentioned a case which had been treated for six months for bronchitis. He examined the patient, found the growth, removed a piece for examination, then took her to the hospital intending to extirpate the entire larynx. At the time of operation he found that the right side had cleared up, so he extirpated only half of the larynx. Three months later the other side became involved, but this was cured by X-ray treatment, the only case on record at that time, 1901, so far as he knew. The patient is now aged sixty-one and has been well eight years, but wears a tracheal tube.

Dr. B. R. SHURLY spoke of the borderland cases in which it was

necessary to differentiate between syphilis and carcinoma. Dr. Chappell had mentioned only the iodide of potassium. The biniodide of mercury in addition to the iodide of potassium would enable one to get the patient rapidly under the influence of the iodide. The mixed treatment was advantageous in many instances, but in some cases it was impossible to give it without seriously disturbing the stomach, in which case hypodermic methods should be used. He had employed the Wassermann test in many suspected cases of syphilis in the upper respiratory tract, and had found it helpful.

Dr. CHAPPELL, in closing the discussion, said he had not employed the tests referred to by the previous speakers. Ordinarily he gave mercury, as suggested by Dr. Shurly. He had found that it exerts a more decided effect upon the cartilage than the iodide of potassium in syphilis of the larynx.

#### REPORT OF A PROBABLE CASE OF SARCOMA OF THE SPHENOID SINUS.

BY DR. DUNBAR ROY.

The patient, a man aged fifty-six, sought medical advice on account of a diminished hearing in the left ear. This gradually became more marked, and passage of the Eustachian catheter on the affected side became impossible. This was followed by exophthalmos and total paralysis of the external rectus muscle. Later the lesion became severe. Exploratory craniotomy was resorted to, and was followed by the patient's death later. The case is given in detail, and the literature bearing upon the subject reviewed.

Dr. ALFRED WIENER thought that if Cushing's theory was true that optic neuritis is due to increased intra-cranial pressure, and disappears after decompression operations upon the skull, in Dr. Roy's case the absence of optic neuritis could be accounted for on the basis that a decompressing operation had in reality been performed by the tumour itself.

#### X-RAY EXAMINATION OF THE MASTOID REGION.

BY DR. SAMUEL IGLAUER.

Radiography has been successfully employed in rhinology, especially in the examination of the accessory sinuses. The difficulties attending radiography of the mastoid region are due to its position at the base of the skull. The author has found that radio-

grams taken in oblique profile of the mastoid region give excellent results. The technique employed is described in detail. Such radiograms delineate the internal anatomy of the temporal bone, showing in particular the external auditory meatus, the mastoid cells, the floor of the middle fossa, and frequently the sigmoid groove. Osteo-sclerosis of the mastoid bone, following prolonged otorrhœa, may be readily diagnosed by X-ray examination. Pus and granulations will probably show in the skiagram, but the X-ray diagnosis of acute mastoiditis is at times attended with some difficulty. Plates and drawings were exhibited, and three radiograms controlled by operation reported.

Dr. S. J. KOPETZKY feared, however, that the picturing of the mastoid process would fail to give results of practical use to the surgeon. Dr. Kopetzky had tried getting X-ray information of the mastoid process, both from the lateral and the antero-posterior position. But the great amount of distortion and overlying shadows had been very discouraging. Regarding Dr. Iglaner's work, Dr. Kopetzky could only call attention to the fact that the distance of the plate from the focal point of the X-ray tube and the divergence of the rays brought upon the plate a picture whose dimensions were different from those of the object photographed. This resulted in a somewhat distorted picture. The inter-relationship of the anatomical structures was changed, and therefore the surgeon could not depend upon the plate for data to be used in operating. For instance, the sigmoid sinus might be shown upon the plate to be separated some distance from the posterior wall of the external auditory meatus, yet on the operating table it might in the given instance be found in juxta-position. This change in the anatomical relationship was due to the divergence of the rays, which diverge in direct proportion to the distance at which the object photographed is placed from the plate, and likewise as the object photographed is placed from the focal point of the tube. Until a table of correction or verification is given, wherein measurements taken on the plate are controlled by actual measurements taken upon the operating table or upon the cadaver, giving the distances of the object pictured both from the focal point of the tube and from the plate, practical results from the X-ray pictures of the mastoid process were hardly to be expected.

Dr. HOLMES said it was always well, however, when anything new was presented, not to draw too positive conclusions therefrom, but to reserve decision concerning its merits until, by prolonged experience, its value had been demonstrated. He called attention

to a recent paper by a Japanese student working in Germany, in which similar work upon the cadaver was reported.

Dr. BALLENGER asked Dr. Iglauer how much distortion was made by the angle which he recommended. He had found enormous distortion according to the position of the head in making X-ray plates of the frontal sinus. In a  $25^{\circ}$  angle and a right-angle exposure he had found the frontal sinus to be three times as large in one plate as the other. Distortion may occur, and might cause damage in operating if the plates were depended upon.

Dr. IGLAUER, referring to the point brought out by Dr. Kopetzky, said it would have been advisable to have made actual measurements upon the plates and upon the bones. Some of the radiograms of dry specimens seemed to be exact reproductions of the bones. Whatever distortion occurred was uniform, so that the relative enlargement was the same. He had nearly always found, in opening the mastoid, that conditions were exactly as indicated in the picture.

#### INCISION FOR SUBMUCOUS RESECTION.

BY DR. SIDNEY YANKAUER.

In order to make the submucous resection an "open" operation, it is necessary to design the incision so that the lower anterior part of the septum, the body of the deviation, will be exposed to view as well as the cartilaginous parts. For this purpose the incision is planned as previously described by the writer, *i.e.* a horizontal extension outwards across the lower border of the nostril towards the outer wall of the nose.

Dr. JAMES F. McCaw had noticed that in most cases there was a lack of room unless the incision was carried well out. This was especially noticeable when the deviation came close to the floor anteriorly. Such an incision gave room to separate the mucous membrane below the ridge.

Dr. ABRAHAM thought the flap operation should not be condemned in all cases; it was sometimes indicated. In cases with slight deviation, with a small spur, the flap operation was an excellent one. He had practised that operation since 1897 in the class of cases mentioned. In cases with high deflections of the cartilage it is impossible for the patient to breathe freely. In such cases he never resorted to such extensive operation as that recom-

mended by Dr. Yankauer. In cases of antero-inferior deflection he had employed this procedure ever since it was first introduced by Dr. Yankauer.

## Abstracts.

### PHARYNX.

**Professor Giovanni D'Ajutolo** (Bologna).—*Concerning a Particular Method of Respiratory Gymnastics for Re-education in Breathing and for General Re-investigation of the System.* "Zip. Gamberini and Barmeggioni," Bologna.

Professor S. D'Ajutolo read this article in one of the public meetings in the Academy of Sciences at Bologna, and it should be taken notice of by all those who have at heart the welfare of the rising generation. In this article respiratory gymnastics were dealt with from the hygienic and curative point of view, but more particularly the author brought forward a simple and practical method of active gymnastics which he had found most useful in treating, after an operation, those who had difficulty in breathing as a result of contraction of the nasal passages or pharynx, or of both combined. This is why we claim for this article the attention not only of those who study hygiene in general, but also of those who take up our line of specialisation. An excellent diagram accompanies the article.

*Grazzi.*

### NOSE.

**Fein, Dr. Johann.**—*A Note on a Simplified Method of Performing Sub-mucous Resection of the Nasal Septum.* "Monats. f. Ohrenh.," Year 43, No. 8.

In this article the author describes what he claims to be his modification of the operation for resection of the nasal septum as introduced by Freer and Killian. It consists in mapping out a quadrilateral, triangular, or polygonal area on the exposed surface of cartilage after elevating the mucous membrane of the convex side. This piece of cartilage is then removed before attempting to separate the remainder of the soft tissues on the concave side. The author states that he has found it both more easy to raise the mucous membrane of the opposite side by this means and also that a perforation or tear is more surely avoided, and he strongly urges the adoption of this method by all operators.

*Alex. R. Treedie.*

**Viолет, Paul** (Paris).—*Recurrent Cystic Polypi of the Nose.* "Revue Hebdomadaire de Laryngol., d'Otol. et de Rhinol.," August 7, 1909.

The case presented some unusual features, as the polypoid growths in the hinder part of the left nostril recurred after removal, and at intervals during the progress of the case a viscid yellowish fluid, similar to that contained in the cysts, was freely discharged from the nostril. A microscopic examination of the tissue removed showed that the cysts were lined with columnar ciliated epithelium. The author thought that the

cysts were formed by an extrusion of the mucous membrane lining the maxillary antrum.

*Chichele Nourse.*

**Knapp, A.**—*The Ocular Complications of Nasal Sinus Disease.* "Amer. Journ. of Med. Sci.," July, 1909.

The author describes encroachment upon the orbit by the bulging walls of frontal and ethmoidal sinuses distended by non-inflammatory contents in mucocele, and also inflammatory changes which attack the orbit secondary to inflammation or empyema of these sinuses. He quotes the conclusion of Birch-Hirschfeld that nearly all orbital inflammations are caused by nasal sinus empyema. The optic nerve may be damaged in sphenoidal sinusitis. Ocular paralysis, neuralgia and asthenopia may occur. A relation between sinus disease and iridochoroiditis and glaucoma cannot be accepted as proved.

*Macleod Yearsley.*

**Reinewald, Dr. Th.**—*A Case of Serous Meningo-encephalitis of Nasal Origin.* "Monats. f. Ohrenh.," Year 43, No. 8.

A student, aged twenty-six, consulted the writer on account of a chronic disease involving the right frontal sinus. The following is an abstract of the previous history of the case :

Towards the end of July, 1906, the patient was suddenly seized with severe frontal headache. He was obliged to take to his bed, and only obtained temporary relief from various drugs prescribed. On August 2 suppuration of the left frontal sinus was diagnosed, some intra-nasal operation performed and the sinus washed out, no immediate relief, however, ensuing. After four days a profuse discharge of pus into the throat took place, which was followed by an improvement in the headache. A swelling over the left eye then appeared, and four days later a return of the headache, but now over the right eye and accompanied by fever. The patient became apathetic and slept the greater part of the day, and, as no response was obtained to irrigation of the right frontal sinus or medicinal remedies, the right frontal sinus was opened from without on August 9. After this a "throat-constriction" band was worn at varying intervals. The headache decreased in severity, but a pustular eruption occurred all over the body accompanied with so intense formication that morphia had to be given. This was followed by an attack of pneumonia from which, however, the patient was sufficiently recovered to allow of his discharge from the clinic on September 10. About October of the same year he was again taken into a hospital as he still had a purulent discharge from the sinus, and the original external wound was again explored and a piece of bone removed : but in spite of this the discharge still continued. About December a sequestrum was removed. In January, 1907, he suddenly lost consciousness whilst walking out of a room, and had convulsions of the upper and lower limbs. This attack lasted about one minute, after which he felt perfectly well. The discharge still continued, although unaccompanied now with pain, and at the advice of the doctors who were attending him he was sent to Reinewald for a further treatment, who made the following note on his condition on October 3, 1907 :

"The right upper lid is swollen, slightly inflamed, and œdematous. There is a scar corresponding to the whole right eyebrow, at the outer third of which is a fistula. The right supra-orbital area is soft and yielding, suggesting that the outer table of the skull here might be lacking. With the exception of a small spot, about 4½ cm., immediately above the



nose, which is very tender, the frontal region is not particularly sensitive, nor is the skull elsewhere tender on percussion. To transillumination the right frontal sinus is dark and the left bright. A probe introduced through the fistula towards the middle line detects some roughened loose bone at a distance of 5 cm. No pus is to be seen either in the nose or naso-pharynx. With Valsalva's experiment the patient can blow air and a purulent secretion out of the fistula."

The radical operation was advised and arranged to be performed on October 12, but on the 11th the patient suddenly became comatose. Reinwald was summoned, and on arriving found that this condition alternated with attacks of epileptiform convulsions, which were of so violent a character that it necessitated two people to prevent the patient doing himself harm. Lumbar puncture revealed only clear cerebro-spinal fluid.

The patient was submitted to operation on the next day, at which a carious condition of the inner wall of the sinus was found, and also an opening into the anterior fossa, in which lay a sequestrum imbedded in granulations on the surface of the dura. The usual surgical principles were applied and an opening made into the nose, through which a drainage-tube was inserted and the external wound closed. After an anxious convalescence the patient recovered consciousness on the eighth day, and in another fortnight left the hospital, since when he has remained perfectly well, free from any nasal discharge, and has been able to resume his work. Reinwald concludes with a long discussion on the various points and problems to which the case gives rise.

*Alex. R. Tweedie.*

**Lafite - Dupont and Moulinier** (Bordeaux).—*Diagnostic Reaction of Tuberculin on the Nasal Mucosa; the Rhino-reaction.* "Annales des Maladies de l'Oreille, et du Larynx," May, 1909.

The authors remark that in 1890 Koch experimented on the diagnosis of human tuberculosis by the subcutaneous injection of tuberculin. In May, 1907, Pirquet, of Vienna, introduced the cuti-reaction, and in June of the same year Wolff-Eissner investigated the effects of tuberculin on the conjunctiva of animals. In June, 1907, Calmette communicated his ophthalmic reaction to the Academy of Sciences. From considerations of these methods the authors were induced to investigate the action of tuberculin on the nasal mucosa, with the result that they obtained in tubercular subjects a reaction of a constant and specific nature.

The technique and description of the procedure is as follows: The solution used contains 1 per cent. of dried tuberculin, prepared according to Calmette's method. Eight tampons of cotton-wool, the size of a small lentil, are soaked in 5 c.c. of the solution and afterwards applied to the nasal mucosa, preferably to that of the septum. Care must be exercised for the next ten minutes to avoid their dislodgment by coughing or sneezing. The reaction shows itself in from eighteen to forty-eight hours by congestion of the mucosa, followed by an exudate at the seat of application of the tuberculin; the exudate undergoes desiccation, and a thin crust, frequently tinged with blood-stain, results, which separates from the fourth to the sixth day, leaving a slightly congested mucosa.

As to the diagnostic value of the test the authors believe it to be as reliable as either the cutaneous or ophthalmic reactions, but possessing the advantage that it can be performed without the patient's knowledge, and that, unlike the ophthalmic reaction, it is absolutely harmless.

*H. Clayton Fox.*

**Richter, C.**—*The Recognition of Simple Non-tuberculous Collapse and Induration of the Right Lung Apex in Chronic Obstruction to Nasal Breathing.* "Deutsch. med. Woch.," No. 18, May 6, 1909.

Richter mentions several cases and emphasises the importance of this condition first described by Krönig. The right apex, in cases where there is obstruction to nasal breathing, collapses somewhat, and has a certain amount of induration throughout. This produces dulness and râles and is very suggestive of apical tuberculosis. To rule the latter out the whole picture of the case must be considered. After improving the nasal condition the signs in the lung usually clear up.

*Macleod Yearsley.*

## LARYNX.

**Johnston, R. H.**—*Stenosis of the Larynx.* "Boston Med. and Surg. Journ.," August 19, 1909.

Three children, all females, are cited, in two of whom the stenosis resulted from diphtheria. Other cases are quoted.

*Macleod Yearsley.*

## ŒSOPHAGUS.

**Guisez (Paris).**—*Facts of Œsophagoscopy; Observations on our Recent Cases of Extraction of Foreign Bodies of Irregular Form (Dentures) by Œsophagoscopy.* "Revue Hebd. de Laryngol., d'Otol. et de Rhinol.," November 7, 1908.

A communication to the French Society of Oto-rhino-laryngology. Three successful cases described and commented upon.

*Chichele Nourse.*

**Laval, F. (Toulouse).**—*The Unsuspected Duration of Ulceration and Spasm in Burns of the Œsophagus, revealed by the Œsophagoscope.* "Revue Hebd. de Laryngol., d'Otol. et de Rhinol.," November 7, 1909.

The established opinion that healing quickly takes place after lesions of the œsophagus caused by burns from swallowing caustic or scalding liquids, and that cicatricial stricture often rapidly follows, is now shown by the œsophagoscope to be erroneous. In reality the cicatrization of such injuries proceeds with extreme slowness. The persistent ulceration keeps up a tonic spasm, which was formerly mistaken for cicatricial stenosis and treated as such. This phase of the case is often prolonged for many months.

The most important conclusion concerns the treatment, which should obviously be directed against the ulceration rather than the stenosis. Besides restrictions in diet, the author advises local applications made through the œsophageal tube directly to the surface of the ulcer. For this purpose he recommends a solution of argyrol, 20 per cent. The gentle use of bougies in order to diminish hyperæsthesia is also advised.

*Chichele Nourse.*

**Munch F. (Paris).**—*Bronchoscopy and Œsophagoscopy.* "Revue Hebd. de Laryngol., d'Otol. et de Rhinol.," September 11, 1909.

After a *résumé* of the various modes of illumination which have been devised, the author describes an instrument of his own in which a very

small electric lamp on a slender stem is placed at the distal extremity of the tube. The arrangement appears to be very similar to that of Chevalier Jackson.

*Chichele Nourse.*

**Moure, E. J.** (Bordeaux).—*A Foreign Body in the Oesophagus; the Relative Value of Oesophagoscopy and of External Oesophagotomy.* "Revue Hebdomadaire de Laryngologie, d'Otologie, et de Rhinologie," September 4, 1909.

In spite of the immense value of the oesophagoscope in locating and extracting foreign bodies, cases occasionally occur in which the instrument is useless. For example, a coin lodged just at the entrance of the oesophagus of a young child is apt to be missed altogether, but it can generally be easily and safely removed by means of Kirrison's hook.

In the case of a child, aged three and a half, who had swallowed a toy anchor, which became impacted in the oesophagus, the oesophageal tube, used under chloroform, slipped time after time into the trachea owing to a condition of violent spasm. The foreign body was located by a radiograph, and eventually external oesophagotomy was successfully practised for its removal.

*Chichele Nourse.*

**Pietri, P.** (Bordeaux) and **Pajaud** (Cognac).—*A Ten-Centime Piece impacted at the Entrance of the Oesophagus of a Child aged seven; Removal with Kirrison's Hook.* "Revue Hebdomadaire de Laryngologie, d'Otologie, et de Rhinologie," September 4, 1909.

The coin was clearly visible by radioscopy. It was easily extracted with Kirrison's hook by Professor Moure after the application of cocaine and adrenalin, when other methods had failed.

*Chichele Nourse.*

## E.A.R.

**Müller, Dr. Arthur** (Heidelberg).—*The "Sérum Antisclérotique" of Malherbe.* "Monatshefte für Ohrenheilkunde," Year 43, No. 8.

In order to determine the influence of the anti-sclerotic serum introduced by Dr. Aristide Malherbe, of Paris, on various forms of chronic progressive deafness, the author carried out some investigations, the results of which he gives in full, prefaced with a long account of the conditions which obtain in these cases, and a *résumé* of the theories as to their causation.

His conclusions are embodied in a short paragraph, at the end of an article of sixteen pages, to the effect that: The anti-sclerotic serum of Malherbe cannot in any way be regarded as a curative agent for deafness, whatever may be its cause or character. If any result does take place it is but slight and transitory. Undesirable sequelæ are often observed, and in "adhesive" conditions the utmost caution must be adopted.

The serum contains a small percentage of pilocarpin, to which the author attributes any temporary alleviation of the symptoms which may occur, and is injected subcutaneously. It seems regrettable that so much patient labour should have been directed in such chimerical research.

*Alex. R. Tweedie.*

**De Stella, Prof.** (Ghent).—*Serous Meningitis and Deafness.* "Archives Internationales de Laryngologie, d'Otologie, et de Rhinologie," July-August, 1907.

In an interesting article Prof. de Stella points out that children are

more easily affected by meningitis than adults, and that the predisposing cause is congenital. The real cause is usually some toxin absorbed from the gastro-intestinal tract, which in many cases, so acts on the auditory apparatus as to leave total or partial deafness. He advises calomel internally, ung. hydrarg. externally, and, above all, early lumbar puncture. In this way pressure symptoms are relieved, and the deafness cured.

The serous fluid is clear, abundant, and aseptic.

Anthony McCall.

**Smith, S. Macuen.**—*The Importance of Cerebral Lesions complicating Suppurative Otitis Media.* "New York Med. Journ.," April 17, 1909.

The author confines himself to purulent meningitis and temporo-sphenoidal abscess. His experience has decided him that the former is the most frequent and fatal intra-cranial lesion complicating aural disease. He believes that an overlooked or unsuspected aural lesion is an ætiological factor in more than 90 per cent. of all cases of meningitis in children. He believes it to be positively curable. After detailing symptoms and diagnosis (a leucocyte count should never be omitted, and lumbar puncture is valuable) treatment is discussed. The opinion is given that every case of meningitis should be operated upon unless moribund.

Macleod Yearsley.

**Botey, Ricardo** (Barcelona).—*Whether or not the Jugular Vein should be Ligatured in Phlebitis of the Lateral Sinus.* "Archives Internationales de Laryngologie, d'Otologie, et de Rhinologie," July–August, 1907.

"Otologists are divided into two groups" says the author, "those who consider the jugular vein ought to be tied to prevent the propagation of the infection to the sinns, and those who believe this unnecessary or tending to diffuse the infection in other directions." The writer belongs to the latter class, claiming that there are fewer deaths when the jugular vein is not ligatured. Several cases are quoted bearing on this point, and he sums up in the following conclusions:

"(1) In cases of attic thrombosis of the lateral sinus without Gerhard's sign the sinus should be opened and ennetted from the upper junction to the bulb without tying the jugular.

"(2) When the jugular is evidently affected (hard cord) it should be opened, tied close to the clavicle, and resected.

"(3) The presence or absence of pulsation in the sinus is not to be relied on as symptomatic of phlebitis, as this may be of cephalic origin. Cases have been known of sinus thrombosis in which pulsations were observed (Moure), and on the other hand a thrombosed sinus may not pulsate (Batey)."

Anthony McCall.

**Alexander, G.** (Vienna).—*Clinical Studies on the Surgery of Orogenic Meningitis.* "Arch. f. Ohrenheilk.," Bd. 75, Heft 3 and 4, p. 222; and Bd. 76, Heft 1 and 2, p. 1, July, 1908.

A long and important article. The whole question is discussed and illustrated with case-records.

The *post-mortem* investigation of meningitis has more than exhausted its possibilities, since we have been led by it to despair of ever being able to drain the meningeal spaces successfully. Clinical experience showed us that it was possible for mild cases to get well, but under the influence

of the *post-mortem* teaching these cases were disguised under the name of "meningismus" or "meningeal irritation." Moreover, wholly unprofitable efforts are made to distinguish clinically "circumscribed" from "diffuse" meningitis.

Lumbar puncture is no certain guide to the type of meningitis, but the mode of development of the symptoms is of considerable value. The more fulminating the onset of the early symptoms is so much the worse is the outlook, whereas a long-drawn-out initial stage is much more favourable.

The author discredits the supposed *rôle* played by meningeal adhesions in limiting the spread of the process. Purulent meningitis localised to the base of the brain, for example, is often found without any evidence of adhesions. As a matter of fact the type of extension is postulated by the mode of invasion. Meningitis which is in direct continuity with a suppurative inflammation in the ear has from the start the features of an abscess, and tends to remain localised. But when the meningitis is set up by infection conveyed from a distance there is a tendency to an early diffusion of the inflammation. For this reason the most reliable information as to the type of meningitis is obtained from the findings at the operation. When, that is to say, the disease-process can be traced from the ear into the cranium along a definite localised tract, then the meningeal infection is probably circumscribed; and when, on the other hand, meningeal symptoms are present in a case in which at the operation on the ear no such obvious tract can be discovered, then the chances are that the meningitis is general and serious.

The value of the examination of the cerebro-spinal fluid receives detailed attention. The pressure of the fluid as it emerges from the spinal cannula may be clinically determined as follows: The pressure is normal when the fluid flowing from the cannula forms an arc of a circle; the pressure is raised when it assumes the appearance of an arc of an ellipse; and when the pressure is lowered the stream forms an angle with the cannula, or comes away in drops. Raised pressure is an unmistakable sign of meningitis, generally of the serous or diffuse purulent variety; but the pressure may be normal or reduced in meningitis if there is a considerable invasion of leucocytes and the fluid is thickened. In these circumstances, indeed, lumbar puncture may fail to draw off any fluid whatever. Turbidity favours the diagnosis of meningitis, but it is not infallible, for collections of pus in close proximity to the sub-arachnoid space may render the fluid turbid without inducing meningitis. Further, the intensity of the turbidity is not proportionate to the extent of the disease, and it has no special bearing on prognosis. Leucocytosis with bacteria in the fluid is a reliable indication of meningitis, but in purulent meningitis the fluid is sometimes sterile and free from leucocytes. The finding of leucocytes in a fluid free from bacteria generally indicates some septic focus near the meninges, such as sinus phlebitis, extra-dural abscess, or an intact brain-abscess.

The operative treatment is carefully described. Special stress is laid upon a wide exposure of the dura and a free incision of the membranes. In severe cases four incisions, 1 to 2 cm. in length, are recommended—two in the middle fossa, one between the lateral sinus and the labyrinth, and one behind the sinus. Multiple incisions are not required when the site of infection is evident. In those cases a single incision should be made through the infected area. In extra-dural abscess, however, it is better to open the membranes to one side of the lesion.

The article should be read in its entirety.

Dan McKenzie

**Küstner, W.**—*A Case of Chronic Middle-Ear Suppuration complicated with Tumour of the Pons (Glio-sarcoma).* "Arch. f. Ohrenheilk.," Bd. lxxv, Heft 3 and 4, p. 181.

Female, aged twenty-three. Suppuration in left ear six years. Pains left side of head and ear. Suppuration also in right ear, but no pain. No serious loss of hearing.

Three months before coming to hospital violent vertigo came on while dancing, and continued for several hours. Six weeks later another attack associated with dragging of right leg. A month later vertigo so violent that patient had to go to bed. Subjective movement of external objects.

On admission paresis *right* arm and leg; facial paralysis *left*, and paresis *left* masseter and temporal. Reduced sensibility skin of *left* side of face, tongue, and soft palate; anaesthesia fingers and toes of *right* side. Tip of left mastoid tender, and tenderness of left side of skull on percussion. Operation: Radical mastoid left, and skull trephined over left temporo-sphenoidal lobe. No brain abscess found.

After operation the condition of the ear improved while the patient's strength declined, and she died two months later.

*Post-mortem.*—Glio-sarcoma left side of pons of the usual infiltrating type.  
Dan McKenzie.

**Gould, G. M.**—*The Myth and Mystery of "Ménière's Disease."* "Medical Record," October 31, 1908.

A long article to prove that "Ménière's disease" is nothing more or less than migraine, and that eye strain is at the bottom of most cases.

Macleod Yearsley.

**Stoker, F.**—*Atrophic Rhinitis complicated by Mastoid Abscess and Extra-dural Abscess.* "Brit. Med. Journ.," February 6, 1909.

An interesting case with fatal issue. No autopsy was obtained, which was unfortunate, although the diagnosis appears to have been fairly clear.

Macleod Yearsley.

**Borden, C. R. C.**—*Aural Complications in the Exanthemata.* "Boston Med. and Surg. Journ.," July 15, 1909.

The complications in measles, scarlet fever, and diphtheria only are discussed, and illustrative cases given. The author emphasises the greater frequency of middle-ear inflammation in children than in adults in scarlet fever, pointing out that in measles the relative liability is equal. He urges the necessity of early operative interference.

Macleod Yearsley.

**Muck, O.** (Essen).—*The Treatment of Acute Middle-Ear Suppuration with Nipple-Shaped Perforation by Aspirating the Pus into the External Meatus.* "Arch. of Otol.," December, 1908.

The author believes this treatment capable of aborting the process, and quotes five cases in which recovery ensued after five, eight, ten, two and five days' treatment respectively.

Dundas Grant.

## MISCELLANEOUS.

**Stucky, J. A.** (Lexington). *Two Unique Cases in Otology and Rhinology.* (Read at the Section for Nose, Throat and Ear for the United States at Fifth Pan-American Medical Congress, held at Guatemala City, Gua., August 5-10, 1908.) "Kentucky Med. Journ.," September, 1908.

(1) Bezold mastoiditis, thrombosis of the sinus with misleading symptoms, followed three weeks after the first operation by fulminating mastoiditis in the other ear, with epidural abscess, erosion of the anterior wall of the tympanic cavity, rupture of the carotid artery, exposed lateral sinus and pachymeningitis; operation; recovery.

(2) Fulminating mastoiditis and pan-sinusitis involving frontal, ethmoid, sphenoidal and maxillary sinuses; meningitis; operation; death; autopsy.

*Case 1.*—Boy, aged eighteen, brought on May 14, 1908. Restless and in great pain, which was referred to the right side of the head, and with marked septic appearance. Temperature 98° F., pulse 116. The parents gave a history of recurrent attacks of suppuration of both ears since babyhood. None of these attacks were very severe or lasted more than a few days. He had never been robust, but was by no means an invalid. For several weeks past had been confined to his bed with "slow fever of remittent type" and pain in back of his head and neck. Occasionally severe pain in ear with scant discharge from auditory canal. Two days before he had violent pain behind his ear, which necessitated giving him morphia gr.  $\frac{1}{4}$  hypodermically, after which swelling over mastoid and extending down the sterno-mastoid muscle was observed. Mastoiditis of the Bezold variety. Urine was loaded with indican and traces of albumen. Blood-count showed marked increase in leucocytes and percentage of polynuclear cells. No examination could be made of the eye fundus on account of restlessness and irritability. There was no history of rigors, sweating, or great exacerbations in temperature. He was prepared for operation at once, ten grains of calomel being administered just before the anæsthetic. The whole bone cortex and cavity, including tip, was very soft and filled with pus. At tip was found perforation leading into neck abscess. A counter-opening was made at bottom of abscess of neck and drained with iodoform gauze. The thrombosed sinus was laid open and diagnosed as such, copious hæmorrhage following passage of the probe in either direction, which was controlled with iodoform gauze plugs. On the fifth day after the operation pain in the other ear was complained of. On May 31, fifteen days after the operation, pain was again complained of in the right ear, and continued at intervals with no elevation of temperature or indications of inflammation of the middle-ear cavity till, twenty-eight days after the operation, some redness and bulging of the drum membrane was noticed. This condition thought due to adenoids, so ether was given, a free myringotomy made, and adenoids removed. The relief was complete for three days, when he was seized with violent pain in and behind the ear, with vertigo and tenderness over the entire mastoid, and deep pressure over the antrum caused not only increased pain but increased vertigo.

The patient was again prepared for operation, and a radical exenteration of the right mastoid was done. The periosteum was normal and the cortex very dense; the mastoid cells were full of pus and polypoid granulations. A fissure in the tegmen antri led into a large epidural

abscess in the middle fossa. The dura was thickened and inflamed, the bony covering of the lateral sinus was destroyed and the sinus was covered with granulations. The tegmen tympani had been absorbed and the middle-ear cavity filled with a firm fibrous polyp, in the removal of which the carotid artery was ruptured. The hæmorrhage was with some difficulty controlled with firm plugs of iodoform gauze. The progress of the case was uninterrupted, and the seventh day after the operations the plugs covering the carotid artery were removed, and the entire wound was found to be satisfactory. Patient improved steadily and returned home three weeks after the last operation.

*Case 2.*—Mrs. C—, aged fifty-eight. Under care for recurring attacks of headache due to ethmoiditis for fifteen years. In 1899 Stucky removed the anterior half of middle turbinates, which had undergone polypoid degeneration. This was followed by almost complete relief for several years.

In March, 1908, all symptoms of the old trouble had returned. At this time she had a well-marked attack of influenza, and the ethmoid and other accessory sinuses were filled with muco-purulent secretion. On April 2 she was sent to the hospital. She improved, and the radical operation was postponed until the acute inflammatory symptoms subsided. The discharge of muco-pus diminished, temperature became normal, and she felt in every respect relieved except the headache. On April 8 pain in the right ear, and the drum membrane slightly inflamed and bulging. A free myringotomy was done. Relief complete for forty-eight hours, when she began to have dull pain over entire right side of head. There was no mastoid tenderness, and no symptom indicating extension of infection to this region. On morning of April 11 she had chill, felt badly all over, marked mental hebetude, vomited frequently. Temperature 99.4–5° F., pulse 82. No mastoid tenderness, no sagging of posterior superior wall. Ear discharging freely. At noon temperature 102 F., pulse 90. Tenderness over the entire mastoid, vertigo and nausea. Complained of being chilly all the time. She was prepared at once for operation of opening the mastoid, and before ether was given was semi-conscious and aroused with difficulty.

Usual incision. Cortex dark blue over antrum; the ossicles were found to be necrosed, the middle ear being filled with granulations and bleeding freely from the Eustachian tube orifice. The antrum was easily entered from the attic with Kerrison's forceps; the whole cellular portion of bone very soft and filled with granulations; no suppuration except the tip cells, which were filled with sanguineous pus. The dura was exposed from antrum to middle ear by removal of the necrosed tegmen antri, aditi and tympani for space of from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch wide, the tegmen antri and aditi coming away as one piece, being broken off with Kerrison's forceps in working back along aditus. Exposed dura was healthy and undisturbed. The wound was left open and packed.

For twenty-four hours after the operation all symptoms improved; then she began to complain of pain, beginning at root of nose and extending straight back to base of skull. Temperature rose from 100° to 104° F. Mental hebetude; pain over frontal region increased, followed by puffing of inner canthus on both sides. Percussion over frontal sinus would cause her to shriek with pain.

Fulminating pan-sinusitis and meningitis was diagnosed and the patient was again prepared for operation. When anæsthetic was started the patient was unconscious. Temperature 104° F., pulse 114. Operation: Posterior nares tamponed. Both middle turbinates were removed with



snare and biting forceps. The ethmoidal and sphenoidal sinuses were found soft and filled with necrotic material, and were curetted. The frontal sinus on the left side was opened externally and found filled with sanguineous fluid under pressure. The lining of the sinus was simply necrosed granulations. This material was thoroughly removed and the opening of the infundibulum was enlarged to ensure drainage. The septum of frontal sinuses was now removed, and a similar though not so severe condition was found on right side and the same procedure adopted as on the left side. The septum in this instance was of unusual thickness. The sinus was drained through nose with iodoform gauze and external wound closed.

The immediate results of the operation were gratifying for twelve hours; the temperature remaining from two to three degrees lower, pulse better quality, less pain, and patient not only recognised but conversed with relatives and attendants. After this she gradually became comatose and died thirty hours after the operation.

The autopsy was conducted by Dr. S. B. Marks, whose report is as follows:

"Skull cap easily removed, but at top along the superior longitudinal sinus for one or two inches on either side the dura was thickened, dark, and very adherent to the bone, the brain tissue being herniated in small spots where tearing took place in separation. The dura was coherent in longitudinal fissure. No pressure within the dura, which was otherwise normal save for discoloration and slight thickening at cribriform plate, the bone here being necrotic and soft as paper, being the probable point of infection. At the base of brain considerable purulent exudate, which glued the mid-brain and the temporo-sphenoidal lobes to the frontal, this exudate also extending into posterior fossa covering inferior surfaces of cerebellum and medulla. The dura exposed during mastoid operation was found normal. The contained fluid within dura was in excess of normal amount and of a dark, bloody colour. The fourth ventricle and the lateral ventricles contained no fluid."

In both cases the acute exacerbation was due to the influenza bacillus. In Case 2 Stucky did not operate at once because he believed chronic basilar meningitis existed, and that an operation in the beginning of this acute exacerbation upon a chronic condition, especially when due to the influenza bacillus, would have done no good.

*Dan McKenzie.*

## REVIEWS.

*Lectures on Hysteria and Allied Vaso-motor Conditions.* By THOMAS DIXON SAVILL, M.D. London: H. J. Glazier, 55-57, Wigmore Street, W. New York: Wm. Wood & Co. 1909.

The subject of hysteria cannot be without interest and importance even to the most exclusive of specialists. We constantly see cases in which hysteria, or at least an hysterical element, intrudes or is suspected, and any work which tends to clear our views in regard to this factor is of the highest value to us. Dr. Savill's work on the subject deserves, therefore, careful perusal and study, more especially as it contains the confirmation of the opinions which, as he tells us, he has expressed and taught for twenty years. The relative frequency of the various symptoms is arrived at by the analysis of his own statistics and of those of Briquet. He places the vaso-motor mechanism in the fore-front in the pathology,

but he frankly admits the importance of the psychic influences on which other authors have laid more particular stress. The diagnosis of hysteria being made we must admit having had frequent disappointments in regard to the effects of treatment, and Dr. Savill shows what a wide view must be taken of each case, and how varied the treatment has to be. The instances he brings forward show in a very striking way what diverse means have to be employed in different cases if success is to be attained. The lecture form here adopted leads to a certain amount of repetition, but it allows of the author enlarging almost *ad libitum* on various details in a way that is scarcely possible in a stereotyped systematic treatise, but which is of the utmost value to the practitioner. The work is very gracefully dedicated to Dr. Harry Campbell, and is brought out in very attractive style by Mr. Henry Glaisher. D. G.

*How to Cut the Drug Bill.* By A. HERBERT HART, M.D. London: Bale, Sons & Danielsson, Ltd., 1909.

Those who have gone through the tedious but instructive experience of dispensing their own medicines at their own expense will remember the tendency to steady increase in the amount of the drug-bill in response to the endeavour to diminish labour without sacrificing efficiency. Dr. Herbert Hart's little work shows how with thought and calculation this may be effected with increased economy, and those who still "keep the key in their own hands" by supplying their patients with medicines instead of prescriptions will find it a valuable guide and helper. Probably very few of our readers are in this position, but many have a share and voice in the management of hospitals or dispensaries where the cost of drugs is a perennial source of inquiry on the part of the house and finance committee. To them we can most strongly recommend the careful consideration of this most practical little work. D. G.

*Pye's Surgical Handicraft: A Manual of Surgical Manipulations, Minor Surgery, and other Matters connected with the Work of House-Surgeons and Surgical Dressers.* Fifth Edition, revised and largely re-written, by W. H. CLAYTON-GREENE, B.A., M.B., B.C., F.R.C.S., with 343 illustrations and plates newly drawn for this edition. Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd., 1909.

The late Mr. Walter Pye was one of the most popular figures in the surgical world of London up to the time of his lamented death and the period of bodily enfeeblement which preceded it, and the repeated appearance of successive editions of his work has been a reminder to his friends of his genial personality. He always wrote as the friend of the student, and his book has consequently always enjoyed a popularity of its own. The present edition has been reverentially reproduced and expanded by Mr. Clayton-Greene, who has spared no pains in bringing it up to date. The sections in which we are most interested have been entrusted to Mr. Carson, who in the space allotted him has given a very useful though condensed account of diseases of the throat, nose, and ear, and he has made such good use of this space that one could only wish a great deal more had been placed at his disposal. His contribution is marked by great surgical common-sense, and will be found very useful to the practitioner. It is illustrated by some excellent plates; the drawings illustrating intubation and direct laryngoscopy are particularly good. D. G.

# THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

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## UNIFORM ACOUMETRIC FORMULA ACCEPTED BY THE EIGHTH OTOTOLOGICAL CONGRESS AT BUDA-PESTH, 1909.

BY DR. JÖRGEN MÖLLER.

(Translated by DR. DUNDAS GRANT.)

For many years otologists have felt the great necessity of having a uniform method of notation for the results of testing the hearing function. Almost everyone who occupies himself with these tests has constructed for his own use a formula of his own, which, unless it has been published afresh in each publication, is often more or less unintelligible to *cofrères*, especially in other countries. It would be most satisfactory if the hearing tests were made everywhere in the same fashion. This certainly can never be attained and it is not altogether necessary; however, we ought to attain everything that is possible, and that is that the most important tests as conducted everywhere should be described in the same manner and with the same international descriptions, so that everyone may at once understand what is being dealt with.

At the Bordeaux Congress the question of an acoumetric formula stood on the programme, and a practical easily intelligible formula was presented by Messrs. Politzer, Gradenigo and Delsaux; the question was, however, left over for further elaboration by the committee appointed by the Congress. The majority of the members of this committee were united in regard to a proposal which was brought before the recent Eighth Otological Congress held at Buda-Pesth and accepted there. The proposed formula is

in its main points identical with the one arrived at at Bordeaux, but modified in many details.

The committee kept in view only the so-called qualitative tests, while the quantitative ones, such as the field of audition and others of the same kind, were left to each individual. The committee did not wish to fix a definite number of tests, all of which and none others should ever be used. It has rather attempted to make the formula so wide that each may find in it what he may want to use himself, while he can leave out what he considers superfluous. The committee is of the opinion, however, that a certain number of tests are indispensable if it is desired to obtain such functional tests as may be sufficient and reliable for diagnostic purposes. Above all things the committee has endeavoured to prepare international descriptions, a system of abbreviations, which may be understood everywhere regardless of the language in which the author otherwise expresses himself.

#### COMMITTEE'S PROPOSALS.

In order that it may be possible to express the result of auditory functional tests in as nearly as possible an identical and generally intelligible way, it is desirable that the schematised formula drawn up by the committee should be adopted, and if abbreviations are employed that they should be those which the committee has formulated. The descriptions of the individual tests should be founded on the initial letters of the Latin names, and the pitch of tones should be indicated according to the German (Helmholz's) musical nomenclature. The results of the tests are written down in a horizontal line. The formula accepted by the committee has such appearances as the following:

↗	AD	25	20	30	÷ 8	2,0	8,0
WS (15) + 5	a <sup>1</sup> M (20)	a <sup>1</sup> A (60)	c <sup>1</sup> A (30)	R (35)	H (3,0)	P (15,0)	
AS	20	60	30	+ 35	3,0	15,0	
		15,0	3,0	D <sub>1</sub>	40,000		
		F (38)	c (78)	LI	LS		
		> 20	15,0	C <sub>2</sub>	40,000		

AD and AS indicate *Auris dextra* and *Auris sinistra*.

W indicates *Weber's test*, the lateralisation being shown by an arrow pointing in the appropriate direction; if there is no lateralisation the sign = (equal) is put down; if the tuning-fork is not heard at all on the vertex then a zero. For these tests the tuning-fork a<sup>1</sup> (435 d. v.) is employed.

S means *Schwabach's experiment*, the difference of the time as

compared with the normal being expressed by means of a  $+$  or a  $\div$ <sup>1</sup> with the number of seconds, or, if necessary, with an  $=$  when the duration of perception is normal. For this, also, the same tuning-fork,  $a^1$  (435) is used, the normal duration of perception for the fork used being noted.

$a^1M$  indicates the length of perception of the tuning-fork  $a^1$  (435) on the mastoid process ( $M = mastoidous$ , bone-conduction). The normal duration is added, the duration of perception by the right and the left ear of the patient being indicated in seconds above and below the line respectively; if only the difference of duration greater or less than normal is measured it can be noted by means of a  $+$  or  $\div$ , and for rapid examination without the statement of the number of seconds simply  $+ d. h.$  (lengthened) or  $\div d. h.$  (shortened); normal duration of perception on the part of the patient is in this case indicated by  $=$ . A normal time of perception for the fork employed must be noted in cases in which the difference in duration alone is measured. Instead of the tuning-fork  $a^1$ , another, such as, for example,  $c^2$  (512), may be used.

$a^1A$  indicates the length of perception of the tuning-fork  $a^1$  (435) when held directly opposite the meatus ( $A = aur$ , air-conduction). The other indications are exactly as given for bone-conduction.

$c^4A$  indicates the duration of perception for the tuning-fork  $c^4$  (2048) when this is held opposite the meatus.

$R$  stands for *Rinne's test*, the difference between the air- and bone-conduction, or it may be between bone-conduction and air-conduction. The number of seconds is inscribed in such a way that a  $+$  is used when air-conduction and a  $\div$  when bone-conduction preponderates; if the duration of hearing of air- and bone-conduction is the same it is indicated by  $=$ ; for superficial investigation it may be sufficient to indicate simply  $+$  or  $\div$  without adding the number of seconds. If the tuning-fork is only heard by air-conduction this can be indicated by  $+ t$ , when only by bone-conduction by  $\div \mathfrak{z}$ , whilst the amount of the difference is put down as  $t \div \mathfrak{z}$ ,  $t$  being used to indicate air-conduction and  $\mathfrak{z}$  bone-conduction. If the difference in duration in Rinne's experiment is to be fixed the normal difference of duration for the fork employed must be added in brackets. For this experiment the tuning-fork  $a^1$  (435) is used.

$H$  stands for *Horologium* (watch), the normal distance of audibility in metres being put in brackets, the distance for the right and left ear of the patient being marked above and below respec-

<sup>1</sup> This  $\div$  (division) symbol is the one used in the author's MS., but is probably intended to be equivalent to our  $-$  (minus).

tively. If the watch is only heard on contact with the auricle the letters *a. c.*, = *ad cocham*, are put down.

*P* indicates *Politzer's acoumeter*. The distance is written in metres in the same way as for the watch.

*V* (*Voe*) indicates ordinary conversational voice, *v*, whispered voice; the distance is put down in metres and the words employed added in parenthesis. If all the test-words are heard at the full distance available, then it is to be assumed that at least a few words can be heard at a greater distance; in this case the amount of the distance in metres is written down with the sign  $>$  (greater than). If the voice is only heard in the immediate neighbourhood of the ear it is put down as 0.01, *d.h.*, that is, 1 cm. If the tests are made with words of equal intensity of "isozonality," as classified by Quix,<sup>1</sup> those different groups are bracketed together and the value for the deepest group should come first.

*LI* indicates *Limes inferior*, the lower limit. It is, when possible, determined by means of Bezold's continuous tone series, and the deepest heard tone marked with its musical denomination or else with the number of double vibrations per second to which it corresponds. If the investigator has not got a continuous tone series at his disposal, but only, for example, a series of *C* forks for the different octaves, there must be added after the description of the deepest double forks the sign  $<$  (less than), which indicates that perhaps still deeper tones might be heard. In these cases it must be indicated with what series of sound the investigation is made.

*LS* indicates *Limes superior*, the upper limit. If this is determined by means of Edelman's Galton whistle the vibration number of the tone is marked down. In other cases the pitch of the tone is tested with the nature series of sound, such as Schulz's monochord, or König's rods, etc.; this must be expressed in the description of the functional test; the highest pitched tone which is heard is taken as the limit.

It is permissible under certain circumstances to omit some of the methods of examination, as any particular tests with the watch and with Politzer's acoumeter, as also Schwabach's and Rinne's tests, if the bone- and air-conductions are tested separately, as also on the other hand the bone- and air-conduction if Schwabach's and Rinne's tests are preferred. On the whole it is advisable, however, to employ all the tests. If any of the tuning-fork tests are made with a different fork from the one above described, the fork employed must be adequately described. If, again, tests are

<sup>1</sup> The Seventh International Otolological Congress, held at Bordeaux, August 1-4, 1904 (see JOURN. OF LARYNGOL., RHINOL., AND OTOL., October, 1904, p. 532).

made with any other sounding forks than those which are set forth in the formula, the description of the fork employed and the duration of perception can be added behind the main formula. Exceptional methods of testing, such as Gelle's and others, must be put down with their full description.

In the case of any further quantitative tests the method in each individual case (each publication) must be clearly described, as also any graphic charts which may be employed.

The pitch of the tuning-forks and of other series of sound should be described in the following way: the notes of the scale are called *c, d, e, f, g, a, h* (= English *b* natural); the intermediate tones are described in the mode customary in German musical language, in so far as the lowering of a note by a semitone is indicated by the addition of *s* or *es* to the name of the original tone (for example, *des, es, as*); the raising of a semitone, on the other hand, by the addition of *is* (for example, *fis, gis, ais*); a flattened *h* is called *b*. The height of the octave is described in the following way: *C*<sub>2</sub>, *C*<sub>1</sub>, *C*, *c*, *c*<sup>1</sup>, *c*<sup>2</sup>, *c*<sup>3</sup>, *c*<sup>4</sup>, *c*<sup>5</sup>, indicating a *C* of 16, 32, 64, 128 (*d.c.*), etc.

The vibration numbers of the tuning-forks are always expressed in double vibrations; as an example the following may be taken as representing the tests in an imaginary case:

<i>AD</i>	÷ 5	0	÷ 20	5,0	0,60	<i>c</i>	15,000
<i>W</i> =	<i>a</i> <sup>1</sup> <i>A</i> (20)	<i>a</i> <sup>1</sup> <i>A</i> (60)	<i>c</i> <sup>1</sup> <i>A</i> (30)	<i>I</i> (28)	<i>c</i> (28)	<i>LI</i>	<i>LS</i>
<i>AS</i>	=	÷ 20	÷ 10	15,0	3,0	<i>A</i> <sub>1</sub>	40,000

It is to be read as follows:

A tuning-fork on the vertex is not lateralised; in the right ear the bone-conduction is diminished, the air-conduction for *a*<sup>1</sup> is absent; for *c*<sup>1</sup> shortened; the hearing power for conversational and whispered voice, the test word being "twenty-eight," is somewhat diminished. The lower limit is pushed distinctly upwards, the upper limit somewhat lowered. In the left ear bone-conduction is normal, air-conduction shortened; hearing power for conversational and whispered voice somewhat diminished; the lower limit pushed somewhat upwards, the upper limit normal. Diagnosis: combined middle-ear and labyrinth disease on the right side; pure middle-ear disease on the left one.

<i>AD</i>	÷	÷	+ <i>I</i>	0	0,1	1,5	- 1	- 1
<i>W</i> =	<i>a</i> <sup>1</sup> <i>A</i> (20)	<i>c</i> <sup>1</sup> <i>A</i> (30)	<i>R</i> (35)	<i>H</i> (3,0)	<i>P</i> (15,0)	<i>I</i>		
<i>AS</i>	÷	÷	+ 20	<i>a.c.</i>	0,5	2	- 1,5	- 1
		0		16	15,000			
		<i>c</i>		<i>LI</i>	<i>LS</i>			
		0,4	- 0,1	- 0,01	16	9000		

The tuning-fork upon the vertex is not heard; the air-conduction is diminished upon both sides; Rinne is positive, the fork not being heard on the right mastoid; the watch is not heard in the right ear at all, but by the left one only on contact; Politzer's aconimeter is heard on the right side at 10 cm. and on the left one at 50. Conversational voice tested with three of Quix's groups of words is only heard at a slight distance, especially those words consisting of high tones and of considerable carrying power (which under normal circumstances are heard much further than deep tones); whispered voice is not heard on the right side, and only for a short distance on the left one; high and far carrying tones are only heard if they are spoken directly into the ear; the lower limit normal (16 *d. c.* =  $C_2$ ); the upper limit much reduced. Diagnosis: Bilateral labyrinthine disease.

These proposals were prepared by representatives of the following countries: Denmark (Hölger), Germany (Panse), Holland (Quix), Italy (Gradenigo), Austria (Politzer), Switzerland (Siebenmann).

The committee request that every reader of the paper will exercise his influence in his circle in order to have the above described rules followed in every test for the auditory function.

## THE CLINICAL VALUE OF THE LABYRINTHINE NYSTAGMUS TESTS (ANALYSIS OF FORTY-TWO CASES.<sup>1</sup>)

BY DAN McKENZIE, M.D.Glasg., F.R.C.S.Edin.  
Assistant Surgeon Central London Throat and Ear Hospital.

THE following cases were collected and tested by myself during the last year. They include many different diseases of the ear, in nearly all of which suspicion of labyrinthine disease was present. I have to express my thanks to my colleagues, Dr. Dundas Grant, Mr. Chichele Nourse, and Mr. Stuart-Low for the opportunities they have generously afforded me of making the tests, and for permission to publish the results obtained.

### METHOD.

The usual methods, introduced by Bárány, of Vienna, for interrogating the vestibular function include the rotation, caloric

<sup>1</sup> Read at the Belfast Meeting of the British Medical Association, July, 1909.



and pressure tests. There is no need for me to enter into a detailed description of the first and third of these as they have been fully described elsewhere, but as I have modified the method of carrying out the caloric tests I will briefly detail it. Just as Bárány has endeavoured to obtain reliable data by measuring the duration of the nystagmus which follows a specified number of rotations in a definite period of time, so I have sought to make the caloric test approach exactitude by measuring the time necessary to evoke the phenomenon. It is obvious that a measurement of the duration of the nystagmus that follows the caloric test will yield irregular results, since the change in the meatal temperature, due to the application of cold or heat, must vary in duration in accordance with many factors over which we have no control. Consequently I determined to measure, not the duration of the nystagmus, but the time necessary to induce it (the induction-period), and to employ the data so obtained along with the character of the eye-movements and the associated phenomena as factors in forming diagnoses. In order to provide uniform conditions I always use water of the same temperature ( $22^{\circ}$ - $24^{\circ}$  C. in the case of cold and  $42^{\circ}$  C. in case of heat), and raise the vessel in which it is contained to the same height (two inches above the ear) in all cases. The apparatus is extremely simple, portable, and inexpensive, and is preferable to the rubber ball syringe usually employed. The douche is stopped the moment nystagmus appears, and thus severe vertigo, sickness and other unpleasant phenomena are avoided.

My results are as follows: In *health* nystagmus appears in from 20 to 40 seconds (average  $28.5''$ ).

In *hyper-excitable states* of the vestibular system nystagmus appears in from 5 to  $15''$ .

When the *excitability* is *reduced* the induction-period is prolonged from 50 to  $120''$  or more; and when the labyrinth is *irresponsive* no reaction at all follows.

Nystagmus usually appears before vertigo is experienced, but occasionally the order is reversed. The severity of the vertigo generally, but not always, varies inversely with the length of the induction-period. In all cases both ears should, of course, be tested separately and the results compared before coming to any decision as to the presence or absence of unilateral abnormality. It is important to permit the nystagmus induced in testing one ear to pass off before testing the other.

I will now proceed to narrate in brief some of the many cases I

have tested in order to illustrate the reactions obtainable in diseases of the middle ear, labyrinth and brain; and I hope to be able to indicate as we go along where the tests have proved of service—or have failed to prove of service—in arriving at a diagnosis.

### I. NON-SUPPURATIVE DISEASES OF THE EAR.

The reactions in *simple chronic middle-ear catarrh* are those of health, so we need not waste time over that disease.

*Otosclerosis*.—The four cases of otosclerosis here presented gave widely different results when submitted to the vestibular tests. In the first, hyperexcitability of the vestibular system was evident, a result which tallies with Pike's (1) investigations in this disease. But the others did not fulfil expectation in this respect. The second reacted in a curious and inexplicable manner, unique in my experience; the third showed a lowered excitability out of all proportion to the deafness present; and the fourth manifested but little, if any, impairment of the canalicular system, although the amount of deafness was very considerable. Consequently we can only express the unsatisfactory opinion that in otosclerosis the vestibular reactions are variable, and seem to bear no relationship whatever to the degree of deafness.

#### CASE 1.—Female 23.

Hearing-tests. <sup>1</sup>	Right ear.	Left ear.
Conversation . . . . .	1 ft. . . . .	1 ft.
Tuning-fork (126 V.D.) . . . . .	Meatus - 20". . . . .	- 25"
	Mastoid + 10". . . . .	+ 5"
	Vertex . . . . .	>
	Rinne - . . . . .	-
	Galton 2.1 . . . . .	1.7

*Tympanic membranes*.—No change in texture or colour, but both indrawn.

#### *Caloric.*

Right ear.	Left ear.
Nystagmus in 9" . . . . .	Nystagmus in 15"
Vertigo . . . . .	Vertigo in 10"

#### CASE 2.—Female 29.

	Paracusis Willisii +.	
Tuning-fork . . . . .	- 30 . . . . .	- 35
	+ 5 . . . . .	+ 3
	> . . . . .	
	- . . . . .	-

#### *Caloric.*

<sup>1</sup>As the same arrangement of hearing-test is preserved throughout all the cases, numbers only are put down after the first case.

Right ear.	Left ear.
Minute nystagmoid twitch in 30''	Minute twitch in 28''; extensive
without vertigo, followed by ex-	nystagmus and vertigo in 62''.
tensive nystagmus and decided	then fine nystagmus again.
vertigo in 120'', of very short	
duration, succeeded by the fine	
nystagmus again.	

CASE 3.—Female  $\frac{21}{1}$ .

Tuning-fork	— 10	— 10
	+ 8	+ 8
	<	
	—	—

Caloric.

Right ear.	Left ear.
Very faint nystagmus 60''	No nystagmus
Very slight vertigo	No vertigo

*Note.*—The negative and impaired vestibular reactions in this case would appear to indicate an amount of disease of the internal ear graver than would seem from the hearing tests. Here the results of vestibular test influenced the prognosis.

CASE 4.—Female  $\frac{20}{1}$ .

— 40	— 40
+ 8	+ 8
Vertex ?	?
Rinne —	—

Paracusis Willisii +. High-pitched tinnitus.

Caloric.

Nystagmus 30''	Nystagmus 40''
Slight vertigo	More vertigo

Next follow two cases illustrating that not inconsiderable group in which *chronic catarrh of the middle ear* is associated with signs of *perceptive deafness*. It cannot be claimed that the vestibular tests throw much light into this dark corner of otology.

CASE 5.—Female  $\frac{23}{1}$ . Deafness of seven years' duration.

— 18	— 25
+ 10	+ 12
	<
	—
Galton 2.2	2.8

*July, 1908.*—Attacks of vertigo of five minutes' duration. Subjective movement of external objects right to left. Spontaneous nystagmus (rotatory) to left.

Caloric.

Nystagmus 45''	Nystagmus 47''
Vertigo	Vertigo

*May, 1909.*—Deafness getting worse. Vertiginous attacks have ceased. Still spontaneous nystagmus to left.

*Note.*—The observation of spontaneous unilateral nystagmus in labyrinth disease secondary to catarrh of the middle ear is new to me. The lowered upper-tone limit and the approach of the induction-period to the extreme upper limits

of health coincide in indicating that the labyrinth is affected. This case would, perhaps, be classified as oto-sclerosis were it not that distinct signs of chronic middle-ear catarrh are present.

CASE 6.—Male  $\frac{2}{3}$ .

— 10	.	.	.	.	.	.	.	— 15
Mastoid $\pm$	.	.	.	.	.	.	.	$\pm$
Rinne —	.	.	.	.	.	.	.	+
Galton 2.6	.	.	.	.	.	.	.	4.7

Signs of catarrh in middle ear. No other cause found for perceptive deafness.

*Caloric.*

Nystagmus 30"	.	.	.	.	.	Nystagmus 30"
Vertigo +	.	.	.	.	.	Vertigo

*Note.*—Vestibular sense unimpaired. The inferences are two: either (a) the labyrinthine disease is confined to the cochlea; or (b) the hearing tests are uncertain guides and denote perceptive deafness when it does not exist. (In general the activity of vestibular reaction rises and falls with the sound-perception; consequently we may be permitted to argue, *à priori*, that of the alternatives presented to us the former is the more probable.)

*Occupation-deafness (Noise-deafness).*—Several cases of noise-deafness were tested, and, curiously enough, all showed reduced vestibular irritability. This result I simply record, as the cases are too few to justify any generalisation. I quote one case:

CASE 7.—Male  $\frac{3}{10}$ . Exposed to heavy gun-firing eight years ago in the Marines.

— 6	.	.	.	.	.	.	.	— 7
— 9	.	.	.	.	.	.	.	$\pm$
Rinne +	.	.	.	.	.	.	.	+
Galton 2.9	.	.	.	.	.	.	.	2.2

*Caloric.*

Nystagmus 45"	.	.	.	.	.	Nystagmus 30"
Vertigo slight	.	.	.	.	.	Vertigo in 15"

*Note.*—Slight vestibular impairment on right side only, corresponding with greater deafness on that side.

*Traumatic Perceptive Deafness (Concussion).*

CASE 8.—Male  $\frac{5}{12}$ . Reliable history of concussion thirteen years ago. Unconscious five days. Deafness, especially in left ear, but also to some extent in right, noticed on recovery. Deafness has got worse lately.

Tuning-fork	.	.	.	— 35	.	.	.	—
	.	.	.	— 10	.	.	.	— 15
								>
Rinne	.	.	.	+	.	.	.	—

Low-pitched tinnitus.

*Caloric.*

Nystagmus 50"	.	.	.	.	No nystagmus.
No vertigo	.	.	.	.	No vertigo.

*Rotation.*

To left =	.	Slight after-nystagmus 8" duration.
	.	Vertigo slight.
To right =	.	One or two twitches only.
	.	Very little vertigo.

*Perceptive Deafness from Tabes Dorsalis.*CASE 9.—Female  $\frac{47}{15}$ .

N. D.

— 18 . . . . . — 23

— 12 . . . . . — 20

&gt;

— . . . . . —  
Galton 23 . . . . . 83

Knee-jerks absent. Rombergism +. A.R. pupils. Discs normal. No history of syphilis.

*Caloric.*

Nystagmus 15" . . . . . Nystagmus 40"

Vertigo . . . . . Marked 60"

Vertigo less.

*Note.*—Delayed reaction in deaffer ear; but reaction in right much livelier than expected.

*Perceptive Deafness from Meningitis (? Epidemic Cerebro-Spinal).*

CASE 10.—Female  $\frac{15}{15}$ . "Meningitis" five years ago. Unconscious several days.

Tuning-fork . . . . . Meatus —  $\infty$  . . . . . —  $\infty$ 

Mastoid — 7 . . . . . — 7

Galton —  $\infty$  . . . . . —  $\infty$ *Caloric.*

No nystagmus . . . . . Very faint nystagmus 120"

No vertigo . . . . . No vertigo.

*Rotation.*

No after-nystagmus.

No vertigo.

*Note.*—The presence of some amount of vestibular irritability is not unusual in deaf-mutism.

*Syphilitic Labyrinthitis.*—In three of these cases the hereditary disease was responsible for the deafness. In the others the disease was acquired. In all the absence of other cranial nerve paralyses renders it probable that the disease was labyrinthine.

In two of the cases the caloric reactions showed that the canalicular system was not involved in a degree proportionate with the cochlear impairment; in the others the cochlea and canals were equally affected.

CASE 11.—Female  $\frac{11}{15}$ . Deaf since the age of 6. (H. S.)—  $\infty$  . . . . . —  $\infty$ 

— 30 . . . . . — 30

&gt;

— . . . . . —  
Galton 4 . . . . . 4*Caloric.*

Nystagmus 25" . . . . . Nystagmus 30"

Vertigo . . . . . Vertigo

*Note.*—An exceptional case. The vestibular tests seem to indicate that the disease spared the canals while seriously affecting the cochlea.

CASE 12.—Male  $\frac{1}{1}$ . Deafness; vertigo.

— 10	.	.	.	.	.	.	.	— 25
— 18	.	.	.	.	.	.	.	— 10

>

—	.	.	.	.	.	.	.	—
Galton 2.5	.	.	.	.	.	.	.	2.9

*Caloric.*

Nystagmus 45"	.	.	.	.	.	Nystagmus 65"
---------------	---	---	---	---	---	---------------

Vertigo and nausea	.	.	.	.	Vertigo less.
--------------------	---	---	---	---	---------------

*Note.*—Comparatively little trouble. The vestibular region affected equally with the cochlear.

CASE 13.—Female  $\frac{2}{1}$ .

— 10	.	.	.	.	.	.	.	— $\infty$
$\pm$	.	.	.	.	.	.	.	—

—	.	.	.	.	.	.	.	—
— $\infty$	.	.	.	.	.	.	.	— $\infty$

*Caloric.*

Nystagmus 30"	.	.	.	.	.	Nystagmus 50"
---------------	---	---	---	---	---	---------------

Vertigo	.	.	.	.	Vertigo
---------	---	---	---	---	---------

*Note.*—The diagnosis of specific labyrinthitis was doubtful. Observe the delayed vestibular reaction on the left, the deafer side; but note also that the reaction is more active than one would expect with such a high degree of deafness.

CASE 14.—Male  $\frac{2}{1}$ . (H. S.) Conversation not heard.

Tuning-fork — $\infty$	.	.	.	.	.	.	.	— $\infty$
— 30	.	.	.	.	.	.	.	— 40

—	.	.	.	.	.	.	.	—
Galton — $\infty$	.	.	.	.	.	.	.	— $\infty$

*Caloric.*

Faint nystagmus 60"	.	.	.	.	Faint nystagmus 90"
---------------------	---	---	---	---	---------------------

Very little vertigo	.	.	.	.	No vertigo.
---------------------	---	---	---	---	-------------

*Rotation.*

To left	.	.	.	No after-nystagmus; vertigo absent (?)
---------	---	---	---	--

To right	.	.	.	Nystagmus; vertigo
----------	---	---	---	--------------------

*Note.*—Compare the caloric and rotation methods and note the correspondence of their results.

CASE 15.—Male  $\frac{3}{1}$ .

— 20	.	.	.	.	.	.	.	— 25
— 10	.	.	.	.	.	.	.	— 10

—	.	.	.	.	.	.	.	—
---	---	---	---	---	---	---	---	---

Singing tinnitus; attacks of vertigo in which the patient nearly falls; physiological nystagmus.

*Caloric.*

Slight nystagmus 90"	.	.	.	.	Slight nystagmus 80"
----------------------	---	---	---	---	----------------------

No vertigo	.	.	.	.	No vertigo
------------	---	---	---	---	------------

*Rotation.*

To left . . . . . No nystagmus; no vertigo.  
To right . . . . . Very slight nystagmus; no vertigo.

CASE 16.—Female  $\frac{1}{1}$ . Deafness for some years, which made rapid progress to almost absolute loss of hearing while the patient was under treatment for gumma of cervical lymphatic glands. Pilocarpin useless. Hears a shout in the left ear only.

$-\infty$  . . . . .  $-\infty$   
 $\infty$  . . . . .  $-\infty$

Galton not heard.  
Slight physiological nystagmus.

*Caloric.*

No nystagmus . . . . . Very slight nystagmus 90°  
Very slight vertigo . . . . . Slight vertigo

*Note.*—The vestibular reactions correspond with the audition tests.

*Hysterical Deafness.*—Three cases have been tested and in all the vestibular sense was found impaired. It was at one time hoped that the vestibular reactions would be found to be normal in hysterical deafness, and so would provide us with a means of accurately diagnosing hysterical deafness. But the hope was not realised. I detail one of the cases:

CASE 17.—Female  $\frac{1}{1}$ . Very intelligent girl. Deaf for several years. Learned lip-reading in six months. Onset of deafness sudden. No other cause of deafness found.

$-\infty$  . . . . .  $-\infty$   
 $-\infty$  . . . . .  $-\infty$

Galton not heard.

*Caloric.*

Slight nystagmus 105° . . . . . No nystagmus  
Slight vertigo . . . . . No vertigo

*Rotation.*

No nystagmus . . . . . No vertigo

*Note.*—While hysteria is evidently not always to be diagnosed by the vestibular tests, Moure and Cauzard (2) point out that the tests may prove useful in legal medicine as a means of excluding malingering.

*Neurasthenic Deafness.*—Two cases of this interesting class have been investigated. Both exemplify the hyper-excitability and instability of the nerve-centres characteristic of the condition.

CASE 18.—Male  $\frac{1}{1}$ . Influenza five weeks ago which left him very weak. Deafness first noticed after this attack. Slight physiological nystagmus.

$-27$  . . . . .  $-28$   
 $-22$  . . . . .  $-20$

>

$+$  . . . . .  $+$   
Galton 18 . . . . . 19

Buzzing tinnitus left. Hears worse when tired.

*Caloric.*

Nystagmus 5"	. . . . .	Nystagmus 8"
Severe vertigo with pallor. (Nys- tagmus reversed after a few minutes.)	tagmus . . . . .	Severe vertigo. Pallor

*Note.*—The induction-period of this case is the shortest I have ever seen. A short induction-period or a violent reaction, the signs of hyper-excitability of the vestibular centres, indicate that the deafness is probably neurasthenic. The contrast with cases of perceptive deafness in which the vestibular sense is almost always more or less impaired may prove to be of diagnostic value. We have seen that in otosclerosis there is also, at times, an excessive reaction, but in that disease the deafness, in the earlier stages at all events, is obstructive in type, whereas in neurasthenic deafness it is perceptive. The prognosis in Case 17 is good, since we may anticipate a recovery from the post-influenzal asthenia of the nerve-centres.

CASE 19.—Female  $\frac{54}{1}$ .

— 6	. . . . .	— 6
— 15	. . . . .	— 12
	<	
+		+
Galton 2.6	. . . . .	2.2

Vertigo on lying down. No subjective movement.

*Caloric.*

Nystagmus 20"	. . . . .	Nystagmus 20"
---------------	-----------	---------------

Intense vertigo with pallor and faintness.

*Note.*—Hyper-excitability denoted by the severe vertigo rather than by an abnormally short induction-period.

*Perceptive Deafness: Cause Indeterminate.*—As might be expected a large number of cases fall under this heading, but I detail only four typical cases.

CASE 20.—Female  $\frac{37}{1}$ .

W.	. . . . .	=	. . . . .	Contact 2"
Tuning-fork	. . . . .	— 8	. . . . .	— 9
		— 5	. . . . .	— f2
			>	
		+		+
Galton	. . . . .	2.5	. . . . .	1.7

*Caloric.*

Nystagmus 30"	. . . . .	Nystagmus 25"
---------------	-----------	---------------

Severe vertigo	. . . . .	Vertigo
----------------	-----------	---------

*Note.*—No sign of vestibular impairment in a case with slight deafness.

CASE 21.—Male  $\frac{40}{1}$ . Subject to attacks of vertigo severe enough to make him hold on to something lest he should fall.

Tuning-fork	. . . . .	— $\infty$	. . . . .	— $\infty$
		— 10	. . . . .	— 10
Galton	. . . . .	5	. . . . .	Not heard



*Caloric.*

Nystagmus 65" . . . . . Nystagmus 80"

Vertigo very slight . . . . . Vertigo very slight

*Note.*—Prolonged induction-period but not in proportion to the severe deafness.CASE 22.—Female  $\frac{3}{1}$ .

— 40 . . . . . — 20

? . . . . . — 10

Rinne — . . . . . —

Galton 28 . . . . . 24

*Caloric.*

Nystagmus 40" . . . . . Nystagmus 30"

Vertigo . . . . . Vertigo

*Note.*—Vestibular reaction very slightly delayed in the deaffer ear.CASE 23.—Male  $\frac{6}{1}$ .

— 30 . . . . . — 20

—  $\infty$  . . . . . — 15

+ . . . . . +

Galton F6 . . . . . 5.2

*Caloric.*Nystagmus 120" . . . . . Nystagmus 60", irregular  
and ill-defined

Vertigo slight . . . . . No vertigo

*Note.*—Vestibular irritability nearly lost.

## II. SUPPURATIVE DISEASE OF THE EAR.

The vestibular tests are naturally of greater importance in purulent than in non-purulent diseases of the ear.

*Middle-ear Suppuration.—Uncomplicated.*CASE 24.—Female  $\frac{3}{1}$ .

January 2, 1909.—Chronic suppuration both ears. Very faint spontaneous nystagmus to right. Adenoids.

— 5 . . . . . — 20

+ 15 . . . . . + 10

&lt;

— . . . . . —

*Caloric.*

Nystagmus 35" . . . . . Nystagmus 20"

Violent vertigo . . . . . Violent vertigo

April 21st.—Adenoids removed.

May 14th.—Ears quite dry.

*Acute Otitis Media; Mastoiditis.*CASE 25.—Female  $\frac{7}{1}$ . N.D. + Ac.S.M.E.

Pain, deafness of three weeks' duration following influenza.

— 21 . . . . . — 12

— 15 . . . . . — 13

&gt;

+ . . . . . +

Redness of Shrapnell's membrane in *left* ear. Tenderness over mastoid tip, Temperature 100.4° F. No spontaneous nystagmus.

*Caloric.*

Nystagmus 45"	Nystagmus 35"
Vertigo	Vertigo

May 19.—M.T. incised under N<sub>2</sub>O.

June 16.—Ear dry; pain gone.

*Note.*—Vestibular reaction being more active in left (the affected) ear than in the right excluded labyrinthitis on that side. The delay on the right side arises from some perceptive trouble.

*C.S.M.E.*—Suspected cerebellar abscess or labyrinthitis.

CASE 26.— $\frac{2}{3}$ .

Discharge both ears. Headache left side. Vertigo. Pain left ear. No spontaneous nystagmus. Pulse 60. Temperature 98° F. Blood-count 12,500 leucocytes per c.mm. Admitted to hospital and watched. Symptoms improved; pain and discharge lessened.

December 19, 1908.—No vertigo; feels better. Slight spontaneous nystagmus to both sides.

December 26.—Incomplete mastoid (*left* ear).

May 5, 1909.—Still discharging. No Rombergism. Still vertigo at times.

*Caloric* (after operation).

Nystagmus 40"	Nystagmus 30"
Vertigo	Vertigo

*Note.*—Cerebellar abscess excluded by history. Labyrinthitis by results of caloric test.

*Acute Infective Labyrinthitis* secondary to purulent otitis media.

CASE 27.—Male  $\frac{2}{3}$ .

Occupation-deafness (noise-deafness) + Ac.S.M.E. Right. Labyrinthitis and meningitis.

July 7, 1909.—Deafness right ear noticed two days ago; severe vertigo, sickness, and vomiting.

— 8	— 8
— 12	— 2

<

Rinne —	—
Galton 5.7	4.8

*Static test.*—On both feet close together with eyes shut falls to right.

Marked spontaneous nystagmus (horizontal) to left. Temperature 98° F.; pulse 80; no headache; no pain in ear.

M.T. right, red, and bulging; intact. No discharge in canal; paracentesis.

July 9. Temperature 99.6° F.; spontaneous nystagmus rather less severe.

July 10.—Temperature 99.6° F.; general state I.S.Q.

July 11.—I.S.Q.

*Rotation test.*

To left — Slow nystagmus to right.

To right — No change in spontaneous nystagmus.

*Caloric* (cold).

Spontaneous nystagmus	Spontaneous nystagmus abolished in
increased in 10"	30"
No vertigo	Nystagmus to right in 40"; no vertigo



May 17.—Ear quite healed. Bilateral nystagmus rather extensive.

Hearing-tests (after operation).

— 20	.	.	.	.	.	.	.	.	— 5
+ 2	.	.	.	.	.	.	.	.	+ 1

>

Rinne —

—

Caloric (after operation).

Nystagmus 100" . . . . . Nystagmus 30"

Vertigo slight . . . . . Vertigo

Note.—The value of estimating the induction-period in carrying out the caloric test in suspected circumscribed labyrinthitis is evident in this case, where rotation produced a normal reaction. It is to be noted that an increase in the length of the induction-period of the vestibular reaction was observed after the radical mastoid.

CASE 30.—Female  $\frac{2}{1}$ . Cholesteatoma L. Ear. Old C.S.M.E. (healed), R. Ear.

February 18, 1909.—Severe vertigo a week ago, with subjective movement to left. Had to lie down. Preferred to lie on left side (= nystagmus to same side). Vomiting and frontal headache. Sleepless. Pain left ear. Still feels more giddy lying on the right than on the left side.

Physiological nystagmus.

— 10	.	.	.	.	.	.	.	.	— 30
+ 5	.	.	.	.	.	.	.	.	+ 10

Rinne — . . . . . —

Galton . . . . . Not heard

Caloric (before operation).

Nystagmus 18" to 22" . . . . . Nystagmus 85"

Vertigo . . . . . Vertigo

Pulse 80 . . . . . Pulse 120

February 19.—Radical mastoid left. Roughening of bone and granulations over inner wall of aditus. Granulations left undisturbed.

May 18.—Some slight discharge left ear still.

— 10	.	.	.	.	.	.	.	.	— ∞
+ 5	.	.	.	.	.	.	.	.	— 8

—

—

Galton 1:4 . . . . . 2:8

Caloric (after operation).

Nystagmus 65" . . . . . Slight nystagmus 110"

Vertigo slight . . . . . Vertigo slight

Rotation.

To left: Nystagmus 5" . . . . . Vertigo

To right: Nystagmus 3" . . . . . Vertigo

Note.—Circumscribed labyrinthitis (left) diagnosed by prolongation of induction-period.

CASE 31.—Female  $\frac{5}{1}$ .

C.S.M.E. Left. Cholesteatoma R.E.

Frequent attacks of vertigo; tends to fall to right; attacks more severe but less frequent lately. Headache over right eye. No spontaneous nystagmus.



*April 5.*—Spontaneous nystagmus to opposite side.

*May 12.*—Slight spontaneous nystagmus to same side only; ear nearly well.

*Caloric.*

No nystagmus . . . . .	Nystagmus 50"
No vertigo . . . . .	Vertigo

*Note.*—The caloric test proved that the nystagmus to the same side, the Rombergism, etc., were probably labyrinthine and not cerebellar, and although no lesion was discovered the recovery bears out this conclusion. Irregular nystagmus, first to one side and then to the other, is not uncommon in labyrinthitis.

CASE 34.—Male  $\frac{37}{2}$ .

C.S.M.E. right; for years. Discharge suddenly stopped four days ago; pain ever since, up side of head and along lower jaw.

— 28 . . . . .	— 10
+ 20 . . . . .	+ 5
>	
— . . . . .	+
(Cerumen left; removed)	

*May 6, 1908.*—Bulging M. T. *right*, incised under  $\text{NaO}$ .

*May 15.*

Meatus — $\infty$ . . . . .	$\pm$
Mastoid — 15 . . . . .	$\pm$
<	
Rinne — . . . . .	+
Galton 1.6	

Spontaneous nystagmus to left, semi-rotatory up and out. Vertigo, tends to fall to right. Unable to stand on one foot, especially on right. Optic discs normal.

*May 15.*—Radical mastoid right. Cholesteatoma in antro-tympanic cavity. Dura exposed roof of antrum. Fistula in external canal occupied by a granulation.

*May 16.*—Spontaneous nystagmus to left more marked.

*May 25.*—*Rotation.*

To left . . . . .	Slight nystagmus
To right . . . . .	Nystagmus scarcely perceptible

*June 20.*—Still vertigo and spontaneous nystagmus; Rombergism +.

*June 24.*—*Rotation.*

To left . . . . .	Nystagmus as before
To right . . . . .	Nystagmus rather more marked

*June 30.*—Spontaneous nystagmus and Rombergism still present.

*January 23, 1909.*—Ear quite well. Still a trace of spontaneous nystagmus to left. Vertigo and Rombergism quite gone.

*Caloric* (after operation).

No nystagmus . . . . .	Nystagmus 40"
No vertigo . . . . .	Vertigo

*Note.*—In this case the prolonged labyrinthine symptoms suggested a mild general infection of the labyrinth.

In several of these cases of circumscribed labyrinthitis the radical mastoid operation cured the disease, but although the labyrinth was not operated on, the vestibular reaction became

either impaired or was entirely abolished afterwards (see Cases 29, 30, 32 and 33).

The explanation may be either that the scar-tissue external to and in the wall of the labyrinth hinders the transmission of heat to and from the canals; or what is more likely, that septic labyrinthitis, even when mild and limited, may destroy the special sense-organs in one or all ampulke. It is to be observed that the cochlear function is not invariably destroyed in company with the vestibular function (see Case 29).

This result contrasts with Alexander's three cases of post-operative labyrinthitis, in which the hearing and vestibular functions returned to normal after operation (3).

*Intra-cranial Complications.*

CASE 35.—Boy 3. C.S.M.E. left. Lateral sinus thrombosis; labyrinthitis (?) meningitis.

Admitted to hospital with rigors, vomiting, choked disc. Immediate radical mastoid left. Next day spontaneous nystagmus to opposite (right) side.

*Caloric.*

Nystagmus 40''	Faint nystagmus 40''
	Not increased after prolonged douching

*Second operation.*—Sinus opened, drained, etc. Died three days after admission.

*Post mortem.*—Lateral sinus thrombosis. Meningitis. Labyrinthitis (?)

*Note.*—Suppurative basal meningitis may cause spontaneous nystagmus.

CASE 36.—C.S.M.E right temporo-sphenoidal abscess. Meningitis.

Female 4½. Pain right ear; discharge.

- 15	- 25
±	- 5
<	
+	+

*Caloric.*

Nystagmus 37''	Nystagmus 30''
Vertigo 25''	Vertigo 25''

Radical mastoid right. Signs of meningitis next day. Death in forty-eight hours.

*Post-mortem.*—Temporo-sphenoidal abscess (right); purulent meningitis.

*Note.*—Vestibular reactions normal.

*After Radical Mastoid. Labyrinth not affected.*

CASE 37.—Female 2½. C.S.M.E. left ear, with granulations.

±	- 15
±	- 6
>	
+	-

October, 1908.—Radical mastoid left; no labyrinthine lesion noticed.

*Caloric.*

Nystagmus 20'' . . . . .	Nystagmus 15''
Vertigo (followed by reversed nys- tagmus in three minutes)	Severe vertigo, sighing, faintness

CASE 38.—Female  $\frac{3}{4}$ . Old radical mastoid left; cholesteatoma right; fistula in meatal roof.

*Caloric.*

Nystagmus 15'' . . . . .	Nystagmus 20''
Vertigo . . . . .	Vertigo violent
	Consciousness disturbed

*Note.*—The excessive reaction usually obtained after the radical mastoid where there is no sign of labyrinthine infection is obviously due to uncovering of the labyrinthine wall. The following case is an exception to the rule.

CASE 39.—Female  $\frac{3}{4}$ . C.S.M.E. both ears; adenoids.

— 10 . . . . .	— 25
+ 15 . . . . .	+ 20

>

December 10, 1908.—Radical mastoid left. External canal noted sound and stapes in position.

*Caloric (after operation).*

Nystagmus 30'' . . . . .	Nystagmus 50''
Vertigo, nausea, vomiting . . . . .	Vertigo.

### *Residual Suppuration (healed) with Perceptive Deafness.*

CASE 40.—Female  $\frac{3}{4}$ . Very deaf. N.D. Perforations and scars in both membranes. Physiological (?) nystagmus (more marked to left than to right).

*Caloric.*

Nystagmus 30'' . . . . .	Nystagmus 30''
Vertigo . . . . .	Vertigo

*Rotation.*

To right . . . . .	Slight nystagmus
To left . . . . .	Nystagmus, vertigo slight

CASE 41.—Male  $\frac{3}{4}$ . Vertigo in coughing, five or six attacks a day, which last four or five seconds. Has to hold on or would fall. Slight physiological nystagmus.

W. . . . .	= — $\infty$ . . . . . 1''
Tuning-fork . . . . .	= — 10 . . . . . $\pm$
	— 10 . . . . . — 10

Rinne + . . . . . +

Galton 3-1 . . . . . 3

M.T. perforations, . . . . . Indrawn opaque  
scars (catarrh)

*Caloric.*

Nystagmus 40'' . . . . .	Nystagmus 40''
Vertigo marked . . . . .	Vertigo marked



CASE 42.—Male  $\frac{40}{40}$ . C.S.M.E. left. Perceptive deafness both ears (syphilitic?).

—  $\infty$  . . . . . — 22  
—  $\frac{7}{7}$  . . . . . + 2

<

Rinne — . . . . . —  
Galton 5:2 . . . . . 3:2

*Caloric.*

Slight nystagmus 30" . . . . . Nystagmus 30" more marked  
Very slight vertigo in 180" . . . . . than on right side. Vertigo  
in 19", and more marked  
than on right side, but not  
equal to normal

*Note.* Vestibular impairment on both sides denoted more by imperfect character of nystagmus and vertigo than by lengthening of the induction-period. Note further that the discharging ear has the more active labyrinth, consequently the labyrinth on that side is probably not involved in the purulent disease.

#### SUMMARY AND CONCLUSIONS.

(1) In otosclerosis the activity of the vestibular sense bore no relationship to the severity of the deafness.

(2) In noise-deafness, concussion-deafness and deafness from meningitis the vestibular reactions were impaired.

(3) In syphilis of the labyrinth the vestibular organ was not invariably affected in proportion to the cochlear.

(4) In hysterical deafness the vestibular sense was impaired in proportion to the severity of the deafness.

(5) In neurasthenic deafness the vestibular system was hypersensitive.

(6) In perceptive deafness of indeterminate causation no conclusions were arrived at.

(7) In chronic uncomplicated suppuration of the middle ear and in acute mastoiditis, the vestibular reactions were normal or slightly exaggerated.

(8) In circumscribed labyrinthitis the vestibular sense as tested by measuring the caloric induction-period was impaired; and the impairment was increased after cure by the simple radical mastoid.

(9) A case of labyrinthitis was found with spontaneous nystagmus to the opposite side, and with normal vestibular caloric reactions.

(10) In temporo-sphenoidal abscess the reactions were normal.

(11) After the radical mastoid in uncomplicated middle-ear suppuration, the reactions were hastened in two cases and delayed in one.

We may say, then, that in the new tests we have a method of diagnosis which the foregoing cases prove to be at times of

considerable value. Let me urge that the vestibular reaction should not be exclusively relied upon in diagnosis, but that it should be taken along with the hearing-tests and other symptoms and signs. In like manner the caloric tests should be supplemented with rotation in doubtful cases before we conclude that the vestibular sense is, or is not, normal.

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- (3) ALEXANDER, G.—“Zur Kenntniss der acuten Labyrinthitis,” *Arch. f. Ohrenheilk.*, Bd. 75, 1908, p. 1.

For a general discussion of the whole subject see Bárány's “Physiologie u. Pathologie des Bogengang-Apparates,” Leipzig, 1907, of which an abridged translation appeared in the JOURN. OF LARYNGOL., RHINOL., AND OTOL., February, 1909, p. 60. See also *Proc. Roy. Soc. Med.*, vol. ii, No. 6, Sydney Scott, “The Problem of Vertigo.” Also “Labyrinthine Nystagmus and Labyrinthine Disease,” by the writer, in *The Practitioner*, May, 1909, p. 655.

## KEY TO CONTRACTIONS.

A.R. pupils	=	Argyll-Robertson.
H.S.	=	Hereditary syphilis.
N.D.	=	Nerve-deafness (perceptive).
Ac.S.M.E.	=	Acute suppuration of middle ear.
Ch.S.M.E.	=	Chronic       “               “               “
M.T.	=	Membrana tympani.

## SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF  
MEDICINE—LARYNGOLOGICAL SECTION.

*Meeting, Friday, November 5, 1909.*

DR. DUNDAS GRANT, *President, in the Chair.*

THE PRESIDENT briefly thanked the members of the Section for the honour they had paid him in electing him as their president for another year. He would not add to the remarks which he had made at the opening of the previous session, but hoped they would favour him by reading them once more in the published reports.

He congratulated the Society on the harmony and activity which had characterised the work of the past session. He especially urged upon the junior members that they should send in the notices of cases which they wish to bring before the Society at the very earliest possible moment for the assistance of the secretaries, and he explained that if there appeared to be any monopoly of the programme by senior members it was mainly due to the fact that the secretaries, when faced with a meagre programme, appealed to those seniors to assist them in filling it up.

The following cases and specimens were shown :

SPECIMENS FROM A FATAL CASE OF CHRONIC GLANDERS IN A MAN,  
AGED TWENTY-FOUR.

BY MR. G. SECCOMBE HETT.

The principal lesion was ulceration within the mouth. The palate, pharynx, fauces, and inner side of the cheeks were involved. There were ulcers on the posterior ends of the inferior turbinals and on the right side of the anterior part of the septum. There had been subcutaneous abscesses on the face and neck. Duration of the disease, two years two months. Specimens of cultures and a guinea-pig which died after inoculation were shown.

In spite of mercury and potassium iodide the ulceration in the mouth extended until the soft palate was destroyed and the bone of the hard palate perforated.

Dr. WM. HILL asked if the lesion in the throat resembled tuberculosis, because he remembered a case which seemed like glanders, but the guinea-pig test was negative. The condition resembled a rapid tuberculous ulceration of the œsophagus and larynx, but at the *post-mortem* no tubercle bacilli were found.

Mr. HETT replied that the ulcer looked like syphilis or lupus from the stellate cicatrisation in its neighbourhood.

Mr. FITZGERALD POWELL thought that the interest in the case lay in its resemblance to tertiary syphilis. Chronic glanders was, he thought, commoner than was generally recognised. Was the mallein test used, and what was the treatment adopted in the later stages?

Mr. HERBERT TILLEY said that the case had been seen at an earlier stage by Dr. Lieven, of Aix-la-Chapelle, and he, impressed by the character of the edges of the ulcer and by the stellate scars, diagnosed tertiary syphilis. On Lieven's suggestion the Wassermann reaction was resorted to, with a negative finding. But notwithstanding this result Lieven had adhered to his opinion.

Mr. HETT added that in spite of the difficulty of growing the organism, vaccines had been prepared and injected but without any result.

The PRESIDENT asked whether the opsonic index for the *Bacillus Mallei* could be used.

THREE SPECIMENS OF NEOPLASMS OF THE PALATINE TONSILS AND ONE OF THE PHARYNGEAL TONSIL REMOVED BY OPERATION, WITH MICROSCOPIC SECTIONS OF THE GROWTHS.

By MR. G. SECCOMBE HETT.

AN ATTACHMENT TO V. BRUNING'S INSTRUMENT FOR FACILITATING MANIPULATIONS UNDER DIRECT LARYNGOSCOPY.

By MR. G. SECCOMBE HETT.

PERFORATION OF NASAL SEPTUM FROM SALT (NaCl).

By DR. DAN MCKENZIE.

A woman, aged twenty, noticed dryness and crust formation in nose six months before coming to hospital. No epistaxis. Four months ago boric acid powder put into one nostril returned by the other. Pain at times rather severe. Patient is a packer of table-salt of the old-fashioned kind. In dry and warm weather the salt blows about in a fine dust. She first went to work nine months ago, and complained of her nose three months later.

The perforation was extensive, involving the greater portion of the cartilaginous septum. Sections cut from the marginal tissues showed typical "giant-cell systems."

The warehouse in which the patient works has been visited by the exhibitor. The work-room is large, airy, and well ventilated. There were eight work-people—seven female and one male—in close contact with salt clouds, as the flouriness of their hair and clothing abundantly testified. Of the seven females (including the patient), four showed perforations, all small, with the exception of the patient. In one case the perforation lay well beyond reach of the finger. The male, a boy, was a grinder of salt and worked continually in an atmosphere foggy with salt-dust, but although he had been at this work for two years there was no perforation of his septum. In other respects the employes seemed unusually healthy. None showed any signs of nasal suppuration.

Specimen of tissue from margin of septal perforation (prepared by Dr. WYATT WINGRAVE) was shown.

Dr. JOBSON HORNE asked why the table-salt was described as "of the old-fashioned kind."

Mr. DE SANTI said that although the perforation might have been due to tertiary syphilis, the likelihood of salt being the causal agent was also possible.

Dr. LEGGE (H.M. Medical Inspector of Factories) in his experience found perforation of the septum from various kinds of dust quite commonly. A large percentage of men employed in the manufacture of bichromate of potash, etc., for example, were afflicted with it. In these cases the perforation was extensive, reaching up to the junction of the septal cartilage with the ethmoid. But as the anterior and lower margins of the cartilage were spared the external shape of the nose remained unaltered. In the manufacture of sheep-dip, also, in which arsenic and sodium hydrate were employed, similar perforations were found. Nothing so far had been found capable of preventing the bichromate perforation.

Dr. H. J. DAVIS had shown a boy at the Laryngological Society in 1905 with a septal perforation. The patient worked in a flour-mill, and the speaker ascribed the perforation to the flour-dust, but in the discussion the balance of opinion was opposed to his view.

Mr. CLAYTON FOX said that the action of dust in the causation of perforation of the nasal septum was well recognised, and there need be no difficulty about accepting this case also as one in which the perforation was thus induced. He felt some difficulty about the giant-cell system, and suggested that a tuberculous infection had been grafted on to the tissues after their resistance had been lowered by the action of the salt.

Mr. ROSE remarked that the presence of giant-cells did not necessarily mean tubercle.

The PRESIDENT considered it probable that the action of the salt-dust was traumatic rather than chemical and that it was favoured by the presence of a deflection of the septum, the concavity acting as a trap for the powder during inspiration.

Dr. DAN MCKENZIE was glad his case had originated an interesting discussion. He used the qualification "old-fashioned table-salt" because he understood that the new-fashioned varieties were composed, not of sodium chloride alone, but of a mixture of substances. He ascribed the perforation to the hygroscopic action of the sodium chloride, to its chemical properties, and not to the mechanical atrophying pressure of scales and crusts due to dry dust. He agreed with the President that in this case the former deflection of the septum was the reason for the large size of the perforation, particularly as in the other employes, in whom the perforations were small, he had not observed any irregularity of the septum. The site of the perforation and the spontaneous cure of the ulceration of its edges were against the diagnosis of syphilis, while the presence of perforation in the other workers favoured the conclusion that the salt was the destructive agent. The absence of actively advancing ulceration militated against the suspicion of tubercle in the margins.

#### CASES OF LARYNGEAL TUBERCULOSIS SUCCESSFULLY TREATED BY GALVANO-PUNCTURE, ETC.

BY DR. STCLAIR THOMSON.

(1) *Tuberculosis of all the Left Vocal Cord and Interarytenoid Space in a Lady, aged forty-six, completely healed by Two Months' Silence and Sanatorium Treatment.*

This lady reported that she had some consolidation of the

right apex in 1907. In March, 1908, tuberculous disease of the right apex was again diagnosed. In May last she noticed increasing hoarseness, and was sent to Dr. Thomson by Dr. Stuart, of Camberley. When examined on July 3, 1909, the voice was hoarse, toneless, and the throat uncomfortable. The left vocal cord was replaced by a red, fleshy, and abraded infiltration. There was infiltration of the interarytænoid region, with much catarrh. There was some dulness and tubular breathing at the right apex. No moist sounds, no temperature. The weight was 7 stones 11 pounds.

The patient entered King Edward VII Sanatorium under Dr. Noël Bardswell on July 17, and remained silent for two months. No tubercle bacilli were found, but she reacted positively to Von Pirquet. When examined on October 6 she had gained nine pounds in weight; the voice was clear and strong. There was no trace of tubercle in the larynx, the left vocal cord being again white and smooth and the interarytænoid region absolutely normal. The only noticeable point in her larynx was the large opening into the sinus of Morgagni. Family history was negative. The interesting point was the rapid recovery in a patient of this age, when general symptoms were slight, without other local measures than silence.

(2) *Tuberculosis of Both Vocal Processes in a Medical Man, aged forty-one, Cicatrised with Seven Applications of the Galvano-cautery.*

In 1902 this gentleman entered a sanatorium with early mischief at the right apex and plentiful tubercle bacilli in clumps. They rapidly diminished and disappeared in three months, and he was discharged after eight months as an arrested case. After an absence of six months he returned to work in the sanatorium as one of the medical staff, and remained there for three years. In July, 1907, he took up practice in a large provincial town. All went well until November, 1907, when he had a slight rise of temperature and hoarseness. This never cleared up. He kept at work until September, 1908, when he first came under observation. There was then recrudescence at the right apex with a few tubercle bacilli. Temperature did not pass 99° F. He could walk seven miles without fatigue; he had lost a little in weight, being 13 st. 1½ lb., instead of the 14 st. at his leaving the sanatorium.

The voice was rough and harsh, but not painful. Over the whole right vocal process was a nodular ulcerating surface, spreading up to the front of the arytenoid. Over the left vocal process was a similar condition, but the ulcer was deeper, as the projection on

the right side fitted into it. The patient had seven applications of the galvano-cautery, which were made between October 8, 1908, and May 20, 1909. During this period he carried on a practice single-handed, and on September 28, he wrote as follows: "My voice is wonderfully good, a little roughish perhaps. General health good. To-day I have cycled twenty-one miles, and feel equal to the same distance to-night if necessary."

Tuberculosis developing in the larynx after the process has been arrested in the lungs does not generally assume an acute form, but it is apt to be extremely tedious, and the above case shows how a cure may be effected, even without rest to the larynx, and while the patient is fulfilling arduous duties.

(3) *Extensive Tuberculosis of the Epiglottis, Left Ary-epiglottic Fold, and Left Interarytenoid Space in a Gentleman, aged forty-seven, completely Healed by the Galvano-cautery and Sanatorium Treatment.*

This gentleman first complained of sore throat in the summer of 1908. He brought up a teaspoonful of blood, which led to examination of sputum, with positive result. In November, 1908, he was taken by his medical adviser (Dr. Blatherwick) to consult Dr. Newton Pitt, who found tuberculous of the larynx and lungs.

When admitted to Pinewood Sanatorium in November, 1908, there were rhonchi over both apices masking the finer sounds. The sputum contained tubercle bacilli, and there was infiltration of the epiglottis, interarytenoid region, and left ary-epiglottic fold. The chest improved, but the laryngeal condition became more marked, and as absolute silence failed to effect an improvement, he was referred to the exhibitor by Dr. Herbert J. Phillips in February, 1909. It was then seen that the entire epiglottis was thickened, red, velvety, and overhanging the glottis. All its outlines and contours were lost. When the patient phonated it was seen that the laryngeal surface of the epiglottis was ulcerated. The vocal cords, the right arytenoid, and the right ventricular band were intact, but there were rolls of indolent infiltration of the left ary-epiglottic fold and pale pink deposit in the left interarytenoid space. The patient was treated with the galvano-cautery, and between February 8 and September 30 he received seven treatments. Improvement was marked from the first, although the sputum continued to show numerous bacilli, and the general progress was interrupted by an attack of appendicitis (? tubercular), and a temperature of 105° F. in June.

The larynx was now soundly healed, although nearly all the epi-

glottis had been destroyed. The director of the sanatorium observed that, in spite of a fair amount of active mischief in the chest, the temperature began to improve with the improvement in the larynx.

Dr. HERBERT TILLEY asked in what class of case Dr. StClair Thomson used the galvano-cautery. Should it be restricted to cases of infiltration, or might it also be used when there is ulceration? He had seen a case of infiltration that day which he had already cauterised three or four times with good result. He described another case with the usual symptoms in which the left cord was entirely hidden by a swollen ventricular band. After treatment with galvano-cautery puncture the disease cleared up so thoroughly that its original site could not now be discovered. He himself looked upon infiltration cases as the most suitable for this treatment. He asked Dr. Thomson why in his third case galvano-cautery puncture had been preferred to amputation of the epiglottis.

Dr. WATSON WILLIAMS asked for fuller details of the puncture of the epiglottis. Was there much local reaction, and was the good result to be ascribed to the reaction? The speaker remarked that Dr. StClair Thomson was one of the first, if not the first in this country, to advocate entire vocal rest in laryngeal tuberculosis.

Dr. SCANES SPICER congratulated the exhibitor upon his favourable result. In spite of the apparently good result, however, the speaker observed that two of the cases still showed active disease. In one the left cord was thickened, and in the other some ulceration of the frænum of the epiglottis was visible. He called attention to his observation that all three of these cases were "belly-breathers," a type of respiration which conduced to laryngeal disease.

Dr. JOBSON HORNE thought it might be accepted without discussion that the infiltration cases were the most favourable for galvano-cautery treatment, seeing that it imitated Nature's methods of healing, in producing fibrosis and a thickening of the epithelium whereby breaking-down was hindered. Rest to the voice was undoubtedly a very important factor. He had recently had this fact emphasised when he found on a recent visit to H.M. prison at Dartmoor that laryngeal symptoms were rarely found among phthisical convicts there—a circumstance he attributed to the strict silence enforced.

Dr. DONELAN related a case in which he had used the galvano-cautery without benefit no fewer than fifteen times. But when absolute silence was observed the larynx began to improve.

The PRESIDENT said he could completely support what had been said by Dr. Thomson, Mr. Tilley and others as to the value of galvano-cautery puncture. He had advocated it at the Section, and was strongly of opinion that the infiltrative were the forms which were benefited by it. He had asked the sister in charge of his Department at Brompton which cases did best, and her reply was those for which he used the galvano-cautery. No doubt they were the cases selected as appropriate for that. Infiltrations, especially when they were more or less circumscribed, were benefited, and the surprising thing was that the patients got an extraordinary relief from pain, even when the puncture was made close to an ulcer which had been painful before. He had sought for rises of temperature after that somewhat active treatment, but none had been present. He admitted he was not now so keen about amputation of the epiglottis as



formerly, and for two reasons. In one or two cases where he removed the epiglottis, perhaps somewhat thoroughly, the framework of the larynx had been already so infiltrated that it could not close in so as to prevent the entrance of fluids during drinking. No doubt if the removal of the epiglottis had not been effected at the time the difficulty would have come on just the same. The instant relief from pain was, however, most striking. The other reason for which he had practically given it up was that the galvano-cautery produced such excellent results. The sclerosis produced in that way was remarkable in its benefit. No one would dream of failing to utilise a single factor, and he always enjoined silence as far as it could be obtained, as well as the galvano-cautery.

DR. ST'CLAIR THOMSON, in reply, referring to the choice of cases for treatment by galvano-cautery puncture, said that the selection of suitable cases was important. But he found it difficult to describe how they should be chosen. The general symptoms should, of course, be favourable, and locally the disease should not be advancing rapidly or approaching the arytenoid joint. He had, however, met with successes even when the swelling and infiltration approximated to oedema in type. In selected cases the treatment presented no drawbacks. He had begun with cases of infiltration only, but lately he had used the cautery to ulcers of the cord, and even to subglottic disease. He was not in favour of amputating the epiglottis, for this cutting operation laid open defenceless lymphatics, and he had heard of it being followed by acute military tuberculosis. The galvano-cautery puncture, on the other hand, was free from such risks. There was no reaction in properly selected cases. It might be, as Dr. Seanes Spicer had said, that two of his cases were not quite cured yet, but the disease was quiescent, and the cases had arrived at that stage when further local interference would be a mistake. Fibrosis had been begun, and the remainder of the treatment might be confidently left to the sanatorium methods. Von Pirquet's (or the entaneous) reaction was now generally used instead of Calmette's ophthalmic-reaction, because of its safety.

PAPILLOMA OF THE LARYNX IN A BOY, AGED SIX AND A HALF, FOUR YEARS' DURATION, CURED BY TRACHEOTOMY AND REPEATED OPERATIONS BY DIRECT LARYNGOSCOPY.

BY DR. ST'CLAIR THOMSON.

This boy was so blocked up with laryngeal papilloma that a tracheotomy had been performed on him before he was admitted to King's College Hospital in 1906, at the age of three and a half. There was hardly any air-way through the glottis, so that the patient had learnt to speak fluently with the pharyngeal voice. Numerous operations were performed on him during the years 1906, 1907, 1908 and 1909. There is no correct record of how often he was put under chloroform, but there are notes of a general anæsthetic being given and of the papillomata being removed by direct laryngoscopy on sixteen occasions. Arsenic was also administered. The growths continued to recur until

this year. Since Christmas he has spoken with the glottis, and allowed the tracheotomy cannula to be corked for part of the day. He still had to wear it when he was discharged on April 4. He was readmitted to the medical wards with measles from May 18 to 29. When taken back to the throat ward on June 30 it was found that his larynx was quite free and that he could breathe perfectly freely with the tracheotomy tube blocked.

The cannula was therefore abandoned on July 2. He now has a very good voice, and can show his larynx by ordinary laryngoscopy. There is a small fistula over the tracheotomy wound, and it is proposed to close this by a plastic operation.

The case is interesting as showing the persistent recurrence of papillomata in spite of frequent and complete removal. It also shows the natural tendency for laryngeal papillomata to disappear about the age of six.

Is it possible that the attack of measles had anything to do with their final disappearance?

The case was also shown to illustrate the advantage and harmlessness of wearing a tracheotomy tube, and how a patient may be cured with a good voice. For many years protests have been made against the useless and crippling employment of laryngofissure in these cases. It is now deplorable to note that, at the last meeting of the Belgian Society of Laryngology, it was proposed to submit these poor children to laryngo-tracheostomy.

Dr. D. R. PATERSON remarked upon the great success of the treatment adopted in this case, and associated himself entirely with the expression of opinion regarding the uselessness of laryngo-tracheostomy.

Dr. STCLAIR THOMSON, in reply, said that in this case the papillomata recurred rapidly after each operation until the attack of measles.

#### WOMAN, AGED FIFTY-SIX, AFTER LARYNGO-FISSURE FOR SUBGLOTTIC ENCHONDROMA.

BY DR. STCLAIR THOMSON.

This patient was shown by Mr. Stanley Green and Dr. Lambert Lack at a meeting of the Section in April, 1908 (*vide Proceedings*, page 90). She then had a smooth, mound-like growth springing from the posterior wall of the larynx below the vocal cords. The exhibitors were inclined to consider it a tubercular tumour, and in view of the facts that there was evidence of tubercular disease of the lungs, as shown by X-ray examination and reaction to Calmette's test, several members were opposed to active

operative interference. Dr. Watson Williams and Dr. Grant had diagnosed the growth as cartilaginous. The patient afterwards passed under the care of Sir Watson Cheyne (by whose kind permission the case was exhibited), and he removed the tumour by laryngo-fissure. Microscopic examination showed it to be an enchondroma.

Dr. JORROX HORNE asked whether a tuberculoma was ever seen in the situation.

Mr. GREEN wondered if the patient had derived any benefit whatever from the operation. There was still stridor, the voice was very husky, and on the neck there was an extensive keloid. Considering the state of the patient immediately following the operation and the grave risk she had run of losing her life, the speaker doubted the propriety of the operation.

Dr. STCLAIR THOMSON replied that he was not responsible for the operation and that the voice still left much to be desired.

#### THREE CASES OF THYROIDECTOMY FOR CANCER OF THROAT, ETC.

BY MR. STUART-LOW.

CASE I. *Ligation for Partial Ablation of Thyroid*.—This man was a porter in the General Post Office for many years, and on May 5, 1909, came to the clinic at the Central London Throat, Nose and Ear Hospital, complaining of loss of voice and difficulty of swallowing of two months' duration. A large, grey, mushroom-like mass was seen covering over and projecting into the larynx. Dr. Wyatt Wingrave reported that the growth was epitheliomatous, "one of the most rapidly growing and virulent that he had seen." On May 10, 1909, under local anaesthesia (1 per cent. cocaine), a collar incision was made over the thyroid, the isthmus was divided, the left lobe isolated, and all the vessels proceeding to and from this ligatured. Suddenly the larynx became obstructed, probably from the large growth hanging over its entrance having become fixed in the passage. The patient very rapidly became cyanosed and respiration ceased. It was urgently necessary to perform tracheotomy, when recovery quickly took place. This accident proved the wisdom of having used local anaesthesia as against general anaesthesia in the particular case. It was now found impossible to remove the thyroid, which was originally intended, without greatly prolonging the operation, and it was thought best to tie the superior thyroid of the right lobe, and trust to this and efficient ligation of the left lobe to minimise the thyroid function. The large wound was partially closed and firmly packed with gauze. The patient made an excellent and uninterrupted

recovery, leaving the hospital in a fortnight; the left lobe of the thyroid, all the vessels of which had been ligatured, sloughed, and came away in the dressings with the ligatures.

It was now nearly *six months* since the operation was undertaken, and the case had been watched very attentively.

Before the operation the patient was rapidly getting worse and losing weight, but since then he had put on weight, having gained 1 st. 1 lb. He was swallowing better, and the growth in the larynx and pharynx had diminished very much in size. There had been no pain, and the patient was much stronger, and expressed himself as feeling better in every way since being operated upon.

This was the first case in which ligation, as distinguished from excision, had been practised and trusted to by the exhibitor for the partial ablation of the thyroid. Judging from the results in this instance, the plan would certainly seem to answer well. Ligation is a more rapid process than excision, as the thyroid in these cancerous subjects is often enlarged, very vascular, and very adherent to surrounding structures, therefore often most tedious and troublesome to isolate.

CASE 2.—A man, a painter by trade, aged fifty-eight, who came to the Central London Throat, Nose and Ear Hospital on May 22, 1908, complaining of pain in the tongue and neck, and of a swelling on the neck of six weeks' duration. There was an ulcer of the size of a shilling on the right side of the tongue. It was excavated and indurated, and had the characteristic stony hardness around and towards the base of the tongue. The induration extended on to the palate and under the sterno-mastoid near the angle of the jaw. No doubt could be entertained as to the primary ulceration being epitheliomatous, or that the enlarged glands were a secondary extension from the tongue. The pathological report supported the clinical diagnosis, and it being considered futile to try to eradicate the growth thyroidectomy was decided upon. Complete hemithyroidectomy was performed on June 3, 1909, the left half of the thyroid, including half of the isthmus, being removed; it was found very vascular and adherent to the surrounding structures. The patient was in the hospital for a week after the operation, and during this time suffered no pain in the tongue or neck. For some time before the operation the pain in the neck, shooting from the tongue to the enlarged glands and up to the side of the head, had been so severe as to keep him awake, and necessitated his having hypnotics every night. He was now an out-patient and for some

weeks returned to his work as a painter. The ulcer on the side of the tongue healed, the induration became much less, and the glandular swelling softer.

A very interesting, instructive, and important change took place in the hard mass of glands on the right side of the neck in this patient, commencing soon after the operation on the thyroid, viz. gradual and progressive softening. This went steadily on until there was great tension of the superficial surrounding tissues, and it was decided to incise the swelling and anticipate pointing and ultimate bursting of the enlargement. On freely opening it a large quantity of glairy mucoid fluid was discharged, which, on pathological examination by Dr. Wyatt Wingrave, was found to consist chiefly of mucin. The inference, therefore, might be taken to be that the removal of the thyroid had induced a myxomatous degeneration in the mass of cancerous glands. Since this incision the mass of secondary growth in the glands had slowly diminished, and much discharge had taken place ever since, containing pieces of broken-down tissue which sloughed away. On inserting the finger a cavity could be felt where the mass of hard glands was.

CASE 3.—A man, aged sixty-five, with epithelioma of the soft palate and some secondary glands on both sides of the neck. On July 10 hemi-thyroidectomy was performed under local anaesthesia. He was still under observation and had gained six pounds in weight. His general condition was good and the glands became smaller and softer. He was attending regularly as an out-patient.

There seemed no doubt that partial removal of the thyroid had an influence on these growths. It seemed to have a deterrent effect on the rate of growth of the primary tumour; the secondary glands, too, seemed to be favourably affected, as in these cases there was a softening change in the glands, and they were much less painful. In all cases the pain was very quickly relieved. The patients, instead of losing weight, as they were doing before the operation, put on weight. Another thing noted in all these cases was a distinct slowing of the rate of the pulse.

The PRESIDENT commented on the great relief the patients had obviously obtained and to which they testified so confidently.

Dr. WM. HILL suggested that radium might be tried with advantage in the cases, as he had seen great improvement follow its application.

Dr. DONELAN asked what advantage ligation offered over excision. The collateral circulation was quickly established and the gland-activity continued.

Mr. ROUGHTON remarked that in Mr. Stuart-Low's case the circulation must have been effectually stopped, for the lobe sloughed.

Mr. STUART-LOW, in reply, stated that the rationale underlying the

excision of the thyroid gland in cases of cancer was the hope of retarding growth in the neoplasm. The cases were hopeless, and one was glad to try any treatment that gave promise of relief. The patients now shown were much better since the operation.

INFILTRATION OF LEFT VENTRICULAR BAND; ? NEOPLASM;  
? TUBERCULOSIS.

BY DR. DUNDAS GRANT.

A woman, aged sixty-two, complained of hoarseness with occasional loss of voice while speaking, of one year's duration and apparently gradual development. There was extreme infiltration of the tissues of the left ventricular band, which bulged irregularly so as to cover the whole of the left cord and the anterior part of the right one. It appeared to dip occasionally between the cords so as to prevent their approximation. There were no enlarged glands, no expectoration, no signs of tuberculosis, but there was a tendency to it in her husband's family, he dying, however, of paralysis. A portion of the swelling was removed for microscopical examination, but the examination indicated nothing beyond an inflammatory hyperplasia, and Dr. Wingrave reported that there was no evidence of malignancy.

EPITHELIOMA OF THE RIGHT VOCAL CORD IN A MAN, AGED SIXTY;  
REMOVAL BY THYROTOMY.

BY DR. DUNDAS GRANT.

The patient was first seen by the exhibitor on September 24, 1909, complaining of increased hoarseness of seven years' duration, but which had got worse for six months. On examination of the larynx the right vocal cord was seen to be red and infiltrated, and just below it in front of the right vocal process there was a conical outgrowth measuring about 2 mm. at its base. A portion of the growth was then removed by means of the exhibitor's forceps, and the microscopical report was made by Dr. Wingrave, who reported that in parts it appeared very much like a squamous papilloma, but in others the variety, size, and shape of the cells was atypical. In other parts the characters of an early epithelioma were well shown. Solid cylinders of epithelium with nest or pearl grouping of the cells and crowding of the original papillae were remarked. Heteromitoses were few and Altman's granules absent. Lymphocytic infiltration was well marked, and there were nuclear fragmentation and wandering paranuclear spheres.

With the assistance of Dr. Dan McKenzie Dr. Grant performed thyrotomy, and found the right vocal cord infiltrated right up to its attachment to the arytenoid cartilage, a portion of which he removed along with the cord. The underlying cartilage was freely scraped, considerable bleeding taking place from a spot above the middle of the site of the cricoid cartilage. The galvano-cautery was very freely used over the whole extent of the removal. Hahn's cannula was removed and replaced with an ordinary tracheotomy tube, which was removed next day. The patient was found to be able to swallow water next day, and was then fed by the mouth. He returned home in nine days. When last seen there was a grey, sloughy condition at the site of removal.

EPITHELIOMA OF LEFT VOCAL CORD IN A WOMAN, AGED FIFTY-EIGHT.  
REMOVAL BY THYROTOMY.

BY DR. DUNDAS GRANT AND DR. DAN MCKENZIE.

The patient, a woman, aged fifty-eight, was first seen by Dr. Dan McKenzie on account of hoarseness of eighteen months' duration, which was stated to have come on in one night after an attack of vomiting. A small, irregular, reddish, sessile growth was found on the left vocal cord, somewhat rough but scarcely papillated on the surface, and with free movement of both cords. Dr. Dan McKenzie made a provisional diagnosis of epithelioma, in which Dr. Grant concurred; and this was confirmed by Dr. Wyatt Wingrave on examination of a portion of the growth removed, the tissues showing typical squamous epitheliomatous structure. With Dr. McKenzie's assistance Dr. Grant performed thyrotomy, removed the whole of the vocal cord, and cauterised the site very thoroughly. The patient could drink next day and was discharged nine days after the operation, and when seen a week later showed merely a sloughy condition over the site of operation in the larynx. The after-treatment and the course were the same as in Dr. Grant's other case.

Dr. JOHNSON HORNE asked that the sections and specimens in these cases should be referred to the Morbid Growths Committee in order that no doubt might arise with respect to the actual nature of the disease. Epithelioma of the larynx was diagnosed oftener than it existed.

Mr. DE SANTI looked upon the galvano-cautery as unnecessary and irritating to the tissues.

Mr. SCANES SPICER desired to draw the Morbid Growths Committee's attention to the relations that cancerous growths bore to prominences in and about the larynx.

The PRESIDENT said the sections and specimens were at the disposal of the Morbid Growths Committee. In reply to Mr. de Santi he claimed that the cautery sealed up the lymphatics and lessened the tendency to dissemination.

PARTIAL FIXATION OF THE LEFT VOCAL CORD, PRESUMABLY OF  
TWENTY-ONE YEARS' DURATION, IN A MALE, AGED FIFTY-SEVEN.

By DR. IRWIN MOORE.

*History.*—Twenty-one years ago a swelling, the size of a hen's egg, appeared at left side of neck—level of thyroid isthmus—accompanied by partial loss of voice. Patient attended the Golden Square Throat Hospital and saw the late Sir Morell Mackenzie and Dr. Wolfenden, who told him that one of his cords was paralysed. Under the local treatment of iodine the swelling in neck gradually disappeared during the following five months; at the same time the voice also gradually returned.

Had no further loss of voice or any other trouble till last May, when, after running in a hurry, he noticed a shortness of breath, followed by dryness of throat and some hoarseness of voice, which still continued. Also patient complained of stiffness along left side of neck at level of cricoid cartilage.

Married thirty-six years; thirteen children, three born dead at full term—viz. the fifth, seventh and eighth.

No history of syphilis. No aneurysm nor enlarged glands.

The case was shown for opinion as to whether it was a case of ankylosis of the crico-arytenoid joint or a lesion of the recurrent laryngeal nerve.

Dr. WATSON WILLIAMS thought that the case was one of ankylosis, as the cord was fixed further out than the position of ordinary abduction: and for this reason it was unlike recurrent paralysis.

PARALYSIS OF THE RIGHT VOCAL CORD IN A CASE OF MYOTONIA  
ATROPHICA.

By MR. CLAYTON FOX.

This case was shown at a previous meeting of the Section, when it was deemed advisable to have the opinion of a neurologist. Dr. Frederick Batten very kindly provided the following note: For many years the patient had experienced difficulty in relaxing his grasp, a trouble in first starting to walk in the morning and in going downstairs. In December, 1907, he had an acute illness,



diagnosed as congestion of the liver, which was immediately followed by a difficulty in speaking. Family history: Father died aged sixty-four; no signs of muscular wasting or myotonia. Mother had always had a difficulty in relaxing her grasp, but this lessened as she grew older; she died, aged eighty-two, of senile decay. Other members of the family healthy. Present condition: Patient had the myopathic facies. Pupils were equal and reacted well to light and accommodation. Ocular movements good. No ptosis or nystagmus. The face was smooth and expressionless. There was great weakness of the orbicularis palpebrarum and some loss of power in the orbicularis oris.

The temporal muscles were active, but diminished in bulk. The masseters, tongue, and palate were normal. Both sternomastoids were completely atrophied, and there was some wasting of the upper part of the trapezii. Movements of the head and neck were performed with fair power. Both forearms were flabby and slightly wasted, the flexors and extensors participating to an equal degree. All movements of the wrists were fairly good. No atrophy of the small hand-muscles. When the patient was asked to grasp an object he did so perfectly, but experienced difficulty in relaxing his hold. Trunk muscles normal; slight lordosis in the lumbar and dorsal regions; the vastus internus and externus of both thighs were completely atrophied; the calf muscles and the anterior tibial group were hypertrophied; the knee-jerk was absent on the left side, and difficult to elicit on the right; ankle-jerks absent on both sides; plantar responses, flexor; no sensory changes. In walking the feet were unduly elevated. The patient's method of rising from the recumbent position resembled that met with in pseudo-hypertrophic paralysis.

The right vocal cord was fixed midway between the cadaveric and phonatory positions. There was no evidence of any lesion of the vaso-accessory, either centrally or peripherally. The case was shown to elicit opinions as to whether the laryngeal lesion was a part of the general condition or otherwise.

Dr. BATTEN said the case was very interesting from the neurological standpoint, since it seemed to be one of a class which had been described abroad as myotonia atrophica. It was interesting to be able to note that two of the other cases in the literature had paralysis of the vocal cords. The condition resembled Thomsen's disease in some respects. It was evidently a myopathy, and although the knee-jerks were absent, and *post-mortem* examination of the cases in the literature showed degeneration of the posterior columns of the spinal cord, yet he did not think that the condition was tabetic. Why laryngeal symptoms should appear was unknown.

Mr. CLAYTON FOX said the case seemed to be of the nature of a myopathy rather than a neuropathy. The cord of the affected side was not shortened nor convex outwards, neither was the arytenoid sunken forwards and inwards. He wished to thank Dr. Batten for the notes of the case.

The PRESIDENT thought that in any case the laryngeal appearance was not that of the typical recurrent laryngeal nerve paralysis. The cord was nearer the middle line and there seemed to be a little movement.

SWELLING ON LEFT SIDE OF NECK, ACCOMPANIED BY DYSPNŒA, IN A  
MALE AGED TWENTY-EIGHT.

BY MR. NORMAN PATERSON.

The swelling began in August, 1909. It was opened, and the dyspnœa was relieved. There was now a sinus along which a probe could be passed in an upward direction for some considerable distance. The larynx presented a globular swelling in the region of the left arytenoid cartilage, which disappeared to a large extent during phonation. There were signs of tuberculosis of right apex. Opinions were asked as to the diagnosis of the laryngeal and cervical condition.

The PRESIDENT considered the laryngeal appearance very unusual, but there seemed to be a circumscribed patch of œdema over the cartilage of Santorini, which was drawn in during inspiration.

A CASE OF ACUTE PEMPHIGUS OF THE LARYNX IN A WOMAN, AGED  
FORTY.

BY DR. H. J. DAVIS.

This case was a very interesting one. The patient had been attending the skin department under the care of Dr. Abraham, who recently asked the exhibitor to see her owing to onset of dysphagia and loss of voice of seven days' duration. She was suffering from a severe form of pemphigus vegetans, and was now an in-patient in the hospital. In addition to bulke all over the body, some of which were healing and others recent, the nasal mucous membrane, the lips, tongue and pharynx were also affected; in the fauces the affection somewhat resembled secondary syphilis. But it was the interior of the larynx which presented so peculiar an appearance. The surface was raw and blistered; there was no œdema, but the cords, which met and moved perfectly, were a brilliant crimson.

The surfaces were being dusted with orthoform.

Mr. CRESSWELL BABER had shown a similar case some years ago. This was a man, aged sixty-nine, in whom the pemphigus appeared in the larynx first. Arsenic in large doses was given, but the patient died of nervous exhaustion.

Dr. PATERSON had under observation at the present time a patient who was in the immediate charge of an ophthalmic colleague. She showed very well the essential atrophy of the conjunctivæ in the shrinkage of the globe, due to connective-tissue change following the bullæ, met with occasionally in such cases. Bullæ with milky contents were once or twice seen on the soft palate, but the appearances were mostly whitish plaques on the pharynx, epiglottis, and over the arytenoid region, and those were rarely absent. In the interior of the nose were areas of superficial ulceration with crusts, and there was evidence of some pus around one middle turbinal. The disease had affected the scalp and parts of the limbs, had persisted for years, and was supposed to have begun in the eye. The patient, however, was definite in her statement that it was in the throat that she first felt trouble. It seems not unlikely that all such cases begin, like Mr. Baber's, in the mucous membranes. Ulceration of the soft palate leading to adhesion with the posterior wall of the pharynx has been sometimes noted, and the clinical appearance may consequently further counterfeit a syphilitic lesion.

Dr. H. J. DAVIS, in reply, said that in this case the disease had begun on the skin. He feared nothing could be done for her. At first he had suspected that the arsenic was responsible for the lesions on the mucous surfaces, but this was not the case.

#### A DEMONSTRATION OF HAY'S PHARYNGOSCOPE.

By Dr. H. J. DAVIS.

This instrument, a very ingenious one, was first brought to the exhibitor's notice by Dr. Holbrook Curtis, of New York, in July last. Illumination of the tiny lamps is obtained either by means of a transformer, or, better still, a small dry battery. By rotating the periscope the entire post-nasal space, the Eustachian tubes and the interior of the larynx are brought successively into view. In a suitable case an excellent view of all these parts can be obtained.

#### SOFT FOREIGN BODY IN THE BRONCHUS.

By Dr. D. R. PATERSON.

A child, aged six, was brought on September 1, 1909, with the history of having six weeks previously, whilst eating "monkey" or ground nuts (*Arachis hypogaea*), got one "down the wrong way" and had a severe choking fit, which only ended by its being displaced. From that time wheezing and attacks of cough till she nearly choked were present, and she had been ill, with raised temperature, pain in right side of chest, and coughing up some

matter. The child looked ill and had lost flesh, had a temperature of  $101^{\circ}$  F. and a pulse of 120. Frequent dry, irritable cough, almost "croupy" at times, and stridulous breathing were noted. Sibilant and sonorous rhonchi were audible over the chest, though on the right side the chest movements and breath-sounds were diminished. At the same base fine *râles* were heard, as well as a whistling sound during whole of expiration. Under chloroform a telescopic tube (7 mm.) was passed through the glottis down the trachea, and the nut was seen a short distance from the bifurcation in the direction of the right main bronchus, just below the origin of the branch to the upper lobe, the opening of which, narrowed from swollen mucous membrane, was inspected. The body was firmly fixed and filled the lesion except at one point, through which the respiratory air whistled and mucus escaped. The surrounding mucous membrane was swollen and red. The nut was grasped by a telescopic forceps having the fenestrated "bean" point, and, care being taken to avoid crushing it, was removed without breaking. It consisted of half the kernel. Examination showed the bronchus clear and a patch of ulceration where the body impinged on the wall. On auscultation the air entered freely and the whistling sound had gone. The child made an uninterrupted recovery. The case belonged to the important category of soft foreign bodies which are always most urgent and demand prompt interference. They are dangerous from the complications which rapidly ensue and from the liability of the foreign body to break during extraction.

#### GROWTH OF TONSIL.

By MR. T. JEFFERSON FAULDER.

Male, aged twenty-three, seen first August 3, 1909. Has a large firm growth in situation of left tonsil, noticed by patient for six months. Left posterior half-arch of palate involved. There is a large, hard, fixed mass of glands just behind the angle of the jaw on the left side. Diagnosis made, sarcoma.

Three weeks later the whole left side of the neck and the region of the left tonsil became inflamed and the limits of the growth undefinable. Patient very ill, with high temperature and depression of pulse. During this time the growth in the mouth ulcerated and appeared to slough entirely away, leaving a huge cavity. The gland mass also almost entirely disappeared.

November 5, 1909.—The cavity in the mouth is now completely filled and the mass of glands has re-appeared larger than before.

The case is shown as one of sarcoma temporarily checked by an acute inflammatory process.

#### AN IMPROVED FORM OF DIRECT VISION LARYNGOSCOPE FOR ENDO-LARYNGEAL OPERATIONS.

BY DR. WILLIAM HILL.

This new instrument was employed to show the laryngeal condition of a middle-aged man who had recently been operated on for epithelioma. The right arytenoid cartilage, the right ventricular band and vocal cord, and adjacent subglottic soft tissues had been removed by thyro-tissure. There was now laryngeal stenosis suggestive of recurrence. Since the meeting the entire larynx has been successfully removed.

#### TWO CASES OF MALIGNANT DISEASE OF THE NECK UNDERGOING TREATMENT BY RADIUM.

BY DR. WILLIAM HILL.

A. P—, aged thirty-eight, came to St. Mary's Hospital in July last complaining of marked dysphagia. He was only able to swallow liquids. He had a large swelling on the left side of the neck in the region of the anterior and posterior triangles, extending from the zygoma above to the clavicle below, its anterior limit being near the middle line of the neck over the left of the larynx, and it extended back to within two inches of the spinous processes. It was extremely hard, and an outlying portion removed for microscopical examination proved to be endothelioma. There was slight paralysis of the left facial nerve and complete left recurrent nerve paralysis, the cord being fixed. By œsophagoscopy it was seen that the lumen of the upper two inches of the gullet was crescentic instead of oval or circular in form, the wall of the tube projecting into the lumen on the left side and presenting two well-marked ledges, one above the other. There was no ulceration and the endoscopic view was suggestive of invasion from the tumour in the neck. During the last four months the man had had five applications of 50 mgrm. of pure radium bromide in tube form (kindly lent by Dr. Finzi). One application of seventeen hours had been made within the œsophagus and the same had been made on the cutaneous aspect

of the growth. The five applications had been made at intervals of from three weeks to a month, and he had something over one hundred hours of radium treatment in all. The dysphagia had entirely disappeared and the facial paralysis nearly so; the growth had been reduced to less than one eighth its former size, and was now felt as a small, flat, hard thickening below the angle of the jaw. The vocal cord was still absolutely fixed. The case will be shown again from time to time.

CASE 2 was that of a middle-aged man with a similar tumour in the left side of the neck; the œsophagus was not involved, but there was abductor paresis of the left cord. This man had only recently come to St. Mary's Hospital. He had had only one application of radium, and the surface of the tumour was very red as the result of this twenty-two hours' continuous application. A cast of the neck had been taken; this and the patient will be brought before the Section again from time to time.

#### EPITHELIOMA OF NASAL VESTIBULES AND ADJACENT AREAS.

BY DR. WILLIAM HILL.

C. W——, aged forty-eight. This man was shown at the June meeting of the Section with a malignant ulcerated growth on the floor of the left nasal vestibule and tumefaction of the columella, left ala and lip. It was then shown as probably a case of rodent ulcer; a subsequent microscopical examination of a small portion of the growth showed it to be a true epithelioma. The malignant area was excised by an incision half an inch wide of the apparent margin of the growth extending right down to bone. Recently there were signs that the removal had been imperfect, and Dr. Finzi had seven days previously applied his radium tube for three hours between the lip and the alveolus and for fifteen hours on the facial aspect of the growth. The case will be shown again at the next meeting.

PROCEEDINGS OF THE FRENCH CONGRESS OF  
OTO-RHINO-LARYNGOLOGY.*May 11, 1909; La Presse Medicale, June 5, 1909.*

## DISCUSSION ON EDEMAS OF THE LARYNX.

BY Drs. HENRI BOURGEOIS and LÉON EGGER (Paris).

The serum in œdema does not represent a simple increase in the quantity of lymph normally filling the connective-tissue spaces; being a morbid product, it differs from it both chemically and histologically. With this reservation one may define œdema as a distension of the connective-tissue spaces by an increase in the production or retention of lymph normally existing there. The causes capable of modifying the quantity and quality of this lymph are many, but with Loeper one may reduce them to four: Mechanical forces, which are transmitted through the circulatory apparatus; neurotic forces, supplied by the numerous nerve arborisations which penetrate or surround the cells and capillaries; physical forces, on which the osmotic changes depend; vital forces, which allow of cellular activity, molecular disintegrations, and chemical transformations. Can one draw a parallel between these four varieties of force influencing the formation and absorption of lymph and the four groups of œdema which would correspond with them, viz. mechanical œdema, œdema from retention of chlorides, œdema due to irritation of capillary endothelium, and nervous œdemas?

Such a classification would be erroneous; almost all varieties of laryngeal œdema have for their origin a complex mechanism. If renal œdema be caused by retention of chlorides, chill also plays a part by affecting the local circulation and inducing virulence and development of the parasitic microbes of the throat; if infectious œdema be the result of bacterial activity it is favoured by vascular disturbances and cellular changes, induced by cold, over-use of the voice, and repeated infections. Œdemas following venous stasis are of equally complex origin, in which nervous and trophic disturbances play their *role*. One will therefore classify laryngeal œdemas, not according to their pathogenic mechanisms, but in conformity with their apparent direct causes, distinguishing them as infectious, toxic, renal, neurotic, and mechanical œdemas.

Infectious œdemas are distinguished as primary and secondary; they represent by far the most frequent cases. Under the influ-

ence of cold or other common cause the larynx becomes the seat of œdematous inflammation, just as one sees erythematous anginas develop in the pharynx with more or less pronounced œdema of the faucial pillars and uvula. The infectious agent is conveyed by contagion or else the parasitic microbes become virulent. In both cases the disease is called primary. The reporters describe three degrees of this primary œdema.

A general disease of the organism, pneumococcal infection for instance, may give rise simultaneously with the chief localisation, viz. pneumonia, to an œdematous laryngitis of the same nature or as the result of secondary infection. The laryngeal localisations of a general disease may by secondary infection be complicated by acute œdema. These are the infectious œdemas secondary to acute diseases. œdema sometimes arises as a result of the infection of an accidental wound. The acute œdema in chronic ulcerative affections, such as cancer, tuberculosis and syphilis, always depends upon secondary infection. Peri-laryngeal suppurative inflammations sometimes prove fatal from œdema of the glottis; it is then a question of collateral œdema due to toxins or directly due to microbic action. Laryngeal œdema from Bright's disease is not, as one would suppose, one of the local manifestations of dropsy which appears in the late stages of chronic nephritis. The laryngeal œdema always manifests itself as a unique localisation of a serous exudation; generally the symptoms of nephritis are little complained of during some laryngeal trouble. This should not give rise to surprise; one is not confronted with a pathological disorder arising directly from renal insufficiency, but with a laryngitis, or more exactly, a pharyngo-laryngitis, benign from an infectious point of view, but which has become œdematous and mechanically dangerous on account of the existence of nephritis. In acute nephritis, contrary to that which obtains in Bright's disease, laryngeal œdema is one of the local manifestations of a generalised dropsy having the same significance as hydrothorax, cerebral and pulmonary œdema. The pathogeny of dropsies is different here; retention of chlorides or other salts is not responsible for it, but probably, apart from alterations in the blood, changes in the capillary walls play the principal part. The type of these acute nephrites liable to be accompanied by laryngeal œdema is scarlatinal nephritis. Dieulafoy mentions besides this, early syphilitic nephritis. œdema from the administration of iodides results from an idiosyncrasy impossible to foresee, irrespectively of either the patient or the dosage employed; it is always to be feared, especially in



a person who has manifested relapses of laryngeal catarrh or œdema after taking the drug.

The nervous system, by its vaso-motor mechanism and probably also through trophic influence acting directly on the endothelial cells of the capillaries, is responsible for the origin of many œdemas.

À propos of acute inflammatory œdema the result of cold, the part played by vaso-motor paralysis, which follows the initial constriction, is important. In the œdemas arising from compression, the influence of the nervous system is probable and complex. Other œdemas are described under the title of "nervous œdemas," "angio-neurotic œdemas." In these the nervous system seems to operate alone and the *primum moriens* is unknown or hypothetical. Is it a question of a form of neurosis, toxic influence or auto-intoxication? Some authorities recognise two groups of angio-neurotic œdema; one well individualised clinically to-day is no other than Quinke's œdema localised in the larynx, the other being laryngeal urticaria.

Certain localised œdemas in laryngeal cancer and in those due to compression, the cause of which is not directly obvious, ought to put one on the alert and demand repeated and thorough examinations of the patient.

*Treatment: Palliative.*—Rest in bed must be absolute. The patient must preserve a strict silence, or only avail himself of whispering. Opiates and bromides will relieve the cough and prevent spasm. The diet should be much reduced and limited to liquids. Hajek highly recommends the continual sucking of small pieces of ice in acute inflammatory œdemas; externally the application of leeches has often been of great service; warm moist dressings give relief. The application of iced water by means of Leiter's apparatus has been employed by Semon. On the contrary, pre-laryngeal revulsion, which only favours infection of the wound, should tracheotomy be required, must be absolutely interdicted. Garel has advocated the application, *in situ*, of tincture of iodine; but iodine is liable to induce diffuse œdema. Scarifications are rejected by the majority of authorities on account of their very doubtful efficacy and the danger of infection. The best palliative treatment consists of sprays of adrenalin. Moure advises spraying or instillation, under the control of the mirror, of a solution containing 10 per cent. of cocaine and  $\frac{1}{500}$  or  $\frac{1}{1000}$  per cent. adrenalin. Perinet employs a spray composed of equal parts of solutions of adrenalin  $\frac{1}{100}$  per cent. and cocaine 1 per cent.; this formula seems

needlessly rich in adrenalin, the more so as the patient is himself ordered to apply the spray if necessary. These sprays may be repeated several times in twenty-four hours. They often prevent the need for tracheotomy.

*Surgical Treatment.*—Monre, in Perineau's thesis and in his work, declares himself in favour of removal of a fragment of the œdematous mucosa with cutting forceps. He has thus obtained immediate and definite relief. The indications for this method seem reserved for those cases where the œdema is quite localised, and when, on the other hand, one will not be involved in a mutilation subsequently regrettable.

*Tubage and Tracheotomy.*—Whatever may be the nature of the œdema, but especially when it depends on Bright's disease or is of angio-neurotic origin, it is necessary to bear in mind the rapidity, often alarming, with which asphyxia sets in. One must therefore be always ready to intervene, and to do so soon rather than late. On the other hand, it is tempting in the case of transient œdema to content oneself with such a method as tubage, which leaves no traces behind it. But tubage requires competent supervision, for with the subsidence of the œdema the calibre of the tube becomes too small.

Tracheotomy will probably remain the method of choice for some time to come. One will perform laryngotomy, which is rapid, non-hæmorrhagic, and sufficient for acute cases. It is to be condemned for cancer, tuberculosis, and laryngo-typhus—in short, for all acute or chronic ulcerative laryngitis complicated with œdema, for which one ought to choose tracheotomy. General anaesthesia is strictly interdicted.

*Treatment according to the Cause.*—Primary infectious œdemas are particularly amenable to palliative treatment, expectancy, rest, ice, leeches, and adrenalin-cocaine. In the case of secondary ulcerative laryngitis (variola, typhus, etc.), antiseptic sprays mildly carbolated will be prescribed with a view to avoid the production or increase of inflammatory œdema. For œdema in Bright's disease and heart affections milk in small quantity, diuretics, and no salt in the diet. Angio-neurotic and urticarial œdemas demand rapid and energetic derivative treatment and intestinal disinfection. Collateral œdemas require incision and evacuation of the adjoining laryngeal focus as rapidly as possible.

Dr. GAREL stated that although iodine was successful in certain transitory œdemas, adrenalin was much more effective.

Dr. TRÉKOP had had no experience of the application of an alcoholic

solution of iodine, but of a 1 or 2 per cent. solution in glycerine, which never disappointed him.

Dr. BONAIN thought intubation ought to be more familiar to laryngologists than it was.

Dr. MORRE, in addition to the forms of œdema described by the authors, added a form which accompanied the ulcero-membranous laryngitis associated with Vincent's angina; further, the œdema of leprosy, which was sometimes limited to the epiglottis or to the epiglottis and the arytenoids, of which he had seen several cases, as in his opinion leprosy was not so very rare. Still further, there was œdema extending from a low peritonsillar abscess or from a foreign body, also œdema subsequent to cocaineisation. He recommended excision of a portion of the œdematous tissue by means of laryngeal punch-forceps.

Dr. CASTEX referred to the very infiltrable nature of the subglottic tissues and to the attacks of œdema which implant themselves on the various chronic thickenings in typhoid fever, leprosy, erysipelas, scarlatina, scleroma, etc.

Dr. SARGENT found that surgical treatment could sometimes be avoided by an injection of morphia, even in very young children and in albuminuric œdema.

Dr. MERMOD stated that in tuberculosis of the larynx true œdema was very rare, but that there was always infiltration; he thought œdema of the larynx due to cocaine was very rare, but counselled against the application of a combination of equal parts of cocaine, menthol, and phenol (Bonain) to the larynx.

Dr. ESCAT remarked that in the subjects of Bright's disease œdema of the larynx was always preceded by a laryngeal lesion. Some œdemas of secondary syphilis were due to nephritis. He had seen an œdema limited to one part of the larynx due to a mediastinal tumour. For extensive œdema he avoided counter-irritation, but for a circumscribed one he had seen advantage follow the application of blisters and cupping-glasses. In certain cases of stenosis he thought that the iodide was advisable, but only under supervision.

Dr. LAFITE-DUPONT had observed laryngeal œdema in secondary syphilis with involvement of the kidneys, for which a careful administration of mercury was required.

Dr. PERCEPIED had had a rapidly beneficial result in a case of syphilitic œdema from the administration of 5 grm. of iodide of potassium, but at present he would prefer to administer mercury.

Dr. BOURGEOIS, in reply, said that although iodide of potassium could give rise to œdema of the larynx it was on the whole more efficacious than mercury, as shown by a case in which he had started with proto-iodide of mercury, but got no result until he had administered iodide of potassium. He agreed with Dr. Bonain with regard to intubation. He had seen one case of ulcero-membranous laryngitis following Vincent's angina, but without œdema. (Edema following cocaine was probably due to a secondary paralytic vaso-dilatation. In tuberculosis and syphilis there was infiltration rather than œdema. The administration of sedatives, such as bromide and opium or morphia, was directed towards the spasm rather than the œdema. And Dr. Egger agreed with Dr. Garel as regards the good effects of adrenalin, and with Dr. Escat in regard to secondary syphilis. He had seen a considerable number of cases of leprosy without œdema of the larynx.

## A CASE OF TOTAL LARYNGECTOMY FOR CANCER.

BY M. GAULT (Dijon).

A man, aged fifty-eight, who had a neoplasm the size of an unshelled walnut spreading over the vestibule of the larynx, but not involving the glosso-epiglottic folds and unaccompanied by obvious glandular enlargement. Laryngectomy was performed in two stages: (1) Low tracheotomy and adjustment of an œsophageal tube retained in the nasal fossa; (2) laryngectomy by Perier's method, suturing above, in front of the glosso-epiglottic fold; below division of the anterior wall of the œsophagus a little below the cricoid. Not being able to submit the patient to fulguration as he would have liked, the author closed the œsophageal wound six weeks after the operation. The patient has regained weight breathes and eats well, and is no longer troubled.

CANCER OF THE LARYNX OCCUPYING THE LEFT ARY-EPIGLOTTIC FOLD;  
ENDO-LARYNGEAL OPERATION; RECOVERY.

BY M. GAREL (Lyons).

The tumour, a large epithelioma in a man, aged sixty-two, appearing quite localised, was removed with the galvanic snare at one stroke under the control of the mirror. The operation was performed eight months ago; there had been no recurrence up to the present.

## TREATMENT OF CANCER BY FULGURATION IN OTO-RHINO-LARYNGOLOGY.

BY M. GEORGES LAURENS (Paris).

The author briefly stated the present position of fulguration and his experience of two cases of endo-laryngeal cancer which he had been able to treat by this method. Both cases had been formerly described in detail. Without prophesying anything as to the future, or willing to be optimistic in regard to the prognosis, the author simply stated that his two cases in which fulguration had been performed six months ago were now alive and well, without the least trace of local recurrence; they had resumed their occupations, had fair vocal power, and one of them could even speak all day.

He observed paralysis of the arytenoid muscles in one of the cases, which lasted two and a half months and disappeared com-

pletely under treatment with strychnine. These two cases of fulguration, applied on definitely circumscribed growths, may therefore, in a measure, encourage one in this new treatment of laryngeal cancer, since the immediate results were satisfactory.

#### KERATOSING TUMOURS OF THE LARYNX.

BY M. CASTEX (Paris).

It concerned small growths situated on the vocal cords, warty in appearance, whitish, and at the onset presenting rather the characters of epithelioma met with in men about fifty years of age. The author has had the opportunity of observing this keratosis in a very large papilloma and also in a growth intermediate in nature, so hard that difficulty was experienced in cutting it with forceps. In the first case it was a question of simple papilloma and in the second a papilloma with epidermal globes. It seems that this variety of neoplasm must be compared with lingual keratosis in being always prone to malignant transformation. The author is of the opinion that keratosis generally points to a diagnosis of malignancy, but at the same time the prognosis is relatively benign for malignant growths.

#### A CASE OF POST-TRAUMATIC FIXATION OF THE RIGHT VOCAL CORD.

BY M. LABOURÉ (Amiens).

A patient, after a kick from a horse, which resulted in a fracture of the right side of the mandible, suddenly became aphonic. On examination an ecchymosis of the laryngeal vestibule and paralysis of the right vocal cord was found. Later the right cord became completely atrophied and the epiglottis depressed and flaccid. Traumatic hysteria could not be held responsible for it. Neuritis clearly existed, resulting from a fracture of the larynx, as radiography demonstrated.

#### IS THE RECURRENT AN EXCLUSIVELY MOTOR NERVE?

BY M. LABOURÉ.

Investigations carried out by the author have established disagreement between the experimental results obtained in the case of the rabbit and dog respectively. A study of changes in the blood-pressure in the case of rabbits curarised has shown that the

trunk of the recurrent includes afferent fibres, whilst in the dog the nerve only contains sensory fibres in its peripheral portion, borrowed. These observations harmonise with those of Rethi, Schultz and Dorendorf. Other complementary experiments have demonstrated that the whole of the laryngeal mucosa derives its sensory supply entirely from the superior laryngeal nerve. By very careful dissections the author has shown that in man the recurrent trunk is a mixed nerve, which in a single bundle contains nearly all the motor nerves of the larynx as well as motor and sensory nerves to the trachea and œsophagus. In this respect the recurrent in man resembles that of the rabbit, whilst it differs from the recurrent in the dog in which the branches to the trachea are disassociated from the main trunk. Broeckart has failed to verify the accuracy of Massei's theory, which holds anæsthesia of the laryngeal vestibule to be a premonitory sign of recurrent paralyses. As a result of his researches he feels justified in inferring that the recurrent does not participate in the sensory innervation of the larynx.

#### SINGERS' CATARRH.

BY M. PERRETIÈRE (LYONS).

Laryngeal catarrhs constitute almost the sole troubles in singers.

The causes are three: extrinsic (temperature, dust, and irritating vapours, alcohol, tobacco); professional (using the wrong register, over-use and mis-use of the voice); and intrinsic (organic or constitutional disorders).

Anatomically the catarrh, identical in the various portions of the respiratory tract, results from repeated congestions, complicated by glandular changes; a special form is the catarrh resulting from fatigue. Clinically the patients usually have a catarrhal history, more or less chronic, during which a recent attack has exacerbated the symptoms. Nasal impairment shows itself by defects in vocal quality, pharyngeal changes by alterations in quality and amplitude. Laryngeal lesions involve the several qualities of the voice, timbre, volume, and pitch. Apart from vocal troubles, a large share must be ascribed to hyper-secretion. Vocal catarrhs develop by acute attacks, between which the phonatory function is relatively satisfactory. Their treatment must be simultaneously medical, prophylactic, and the correct use of the voice. H. CLAYTON FOX.

## THE SOCIETY OF GERMAN LARYNGOLOGISTS.

(Continued from p. 559.)

## DIAGNOSTIC AND THERAPEUTIC INSTRUMENTS.

DEMONSTRATED BY HEER BRÜNINGS (Jena).

(1) Light bath for the head, which has given good results in accessory sinus suppuration, cranial neuralgia, keratitis, and suppurative otitis media; it acts by causing hyperemia.

(2) A new inverted incandescent gas lamp which he recommended for examination of patients with the forehead mirror; also a new Nernst lamp with opalescent glass shade.

(3) Rubber sponge tampons; these have great elasticity and good drainage qualities; they are non-irritating and are easily removed. Brünings uses them after operations on the septum and accessory sinuses as there is no tendency to bleeding after removal; they can be sterilised in sublimate solution and kept in boric lotion.

(4) A fenestrated tongue spatula, the fenestration giving a better hold.

(5) A hard paraffin syringe on the ratchet principle with which Brünings has obtained good results in ozæna.

(6) Tonsil snare, also on the ratchet principle, but provided with a fork like some other tonsil instruments.

(7) A vessel for holding endoscopic forceps; the lotion used is 5 per cent. spirit of soap.

(8) Extension tube for bronchoscopy, which can be fixed at any length desired by means of ratchet attachment.

(9) Syringe for applying cocaine to the larynx and bronchi; the distal end consists of a cotton-wool carrier and the solution is squirted into the wool; the dose is of course regulated by the syringe.

(10) Hollow sound for cocainising the œsophagus.

(11) Dilating œsophagoscope for removal of foreign bodies; over-dilatation is not possible.

## THERAPEUTIC EXPERIMENTS IN ARTIFICIALLY PRODUCED LARYNGEAL TUBERCULOSIS.

BY HERREN BRÜNINGS AND ALBRECHT (Freiburg).

In this research the authors used rabbits and inoculated the laryngeal mucosa on both sides (anterior part of the vocal cords)

by means of a small metal syringe and needle passed through a nethroscope. The animals were anaesthetised with scopolamin-morphine. From six to eight rabbits were injected at one time, but one or two of these always died very quickly from pneumonia or miliary tuberculosis. Human and bovine tubercle bacilli in pure culture were found to be too virulent, so tubercular sputum was used mixed with liquor potassae to make a homogeneous fluid. The authors remark that laryngotomy was found to be free from danger, and that they never lost an animal from this operation. On the question of treatment Brünings says that the most useful rays from the therapeutic point of view begin in the green-blue region of the spectrum at a wave length of  $500 \mu\mu$ , and go over the visible boundary to  $100 \mu\mu$ ; the action consists in the remarkably strong cell injury caused by these short wave rays, and is evidenced by erythema which appears some hours or days later; then occur cedema, haemorrhage and engorgement of lymphatics, leading to deep-reaching destruction. The stage of healing is associated with the formation of connective tissue around the inflammatory foci. Luckily the pathological cell formations have an increased photo-sensibility, so that it is possible by correct dosage to destroy the pathological cells. It is important to note that the penetration power decreases with the wave length, only the long waves possessing great power in this direction. The authors used adrenal solution to obtain anaemia of the parts to which the rays were to be applied. Sunlight, mercurial arc light, and X rays were used and compared. Sunlight was used at noon and filtered through copper oxide and ammonia solution to exclude the heat rays; the light was applied intermittently with intervals of one second. Mercurial arc-lamps supply rays of about  $336 \mu\mu$ .

The authors remark that the larynx of the rabbit is very similar anatomically and histologically to that of the new-born child, and the first changes noted after the injections were the formation of small isolated tubercular nodules in the submucous tissue, the superficial mucous membrane not being affected. A small-cell infiltration rapidly forms and surrounds the glands, and at the same time the epithelium swells up and goes on to marked papilla formation, while the nodule becomes caseated at the centre. Macroscopically this stage is recognisable as swelling of the mucosa with irregularity of the surface going on to marked thickening. The destructive process now proceeds from the submucosa to the epithelium, and is one of necrosis due to nutritive disturbance. A superficial ulcer forms, and later on the process



spreads to the muscles, perichondrium, and cartilage. The rays were used in the third week after the inoculation, at which period a marked infiltration had occurred and the muscle had become involved. Sunlight treatment gave negative results, as also did the Quartz lamps, but the X-rays were more successful. Müller-Uri tubes were used, and the surrounding parts were shielded with lead plates. In one animal suffering from bilateral infiltration of the larynx only the left side was exposed to the rays. At the *post-mortem* examination the right side showed marked infiltration, whereas the left gave evidence of resolution and encapsulation of the tubercular process; hyaline connective tissue was found surrounding the tubercular foci, even in cases in which bovine tubercle had been used for inoculation.

#### RÖNTGEN RAY TREATMENT OF HUMAN LARYNX.

By HERF BRÜNNINGS (Jena).

The rays may be applied in four ways: (1) By internal tubes, (2) by endoscopic tubes, (3) by radiation through the skin, and (4) by radiation after operation.

(1) In the first method the anticathode is placed in the same position as the laryngeal mirror, but in this way the tongue gets sixteen times the dose that reaches the larynx.

(2) For the second Brünings has constructed a tube suitable for the direct method; Brünings' bronchoscope is used, and the anticathode of the Röntgen tube is distant only 5 cm. from the disease focus. The author further recommends his contra-pressure endoscope for localising the spot to which the rays are to be applied. The tube must be connected to an earth wire to avoid shocks, and the use of rubber gloves and a rubber mat is advisable. The duration and dosage are regulated according to the length of the tubes, but the technique is still imperfect and the dosage not accurately determined.

(3) In the percutaneous application of the rays the dose must be much larger. It is best to apply the rays from several points consecutively so as to avoid injury of the skin as far as possible. Hard rays are advisable as absorption is slower, and glass discs should be used as filters to keep back all soft superficial rays. This form of application is most convenient, but we must remember that the disease foci are hidden behind cartilages often containing calcareous deposits. Brünings recommends sittings lasting twenty to thirty minutes so as to obtain the normal dose of 5 H when

using a focal distance of 20 cm. and tubes of 7 to 8 (Benoist) degrees of hardness.

(4) Operative illumination is not advisable unless thyrotomy has been performed for some other purpose.

I. DEMONSTRATION OF MODELS MADE FROM MIRROR-PICTURES OF THE NASO-PHARYNX.

II. DEMONSTRATION OF PICTURES AND PHOTOGRAPHS OF POST-MORTEM PREPARATIONS OBTAINED FROM CASES WHICH HAD BEEN EXAMINED WITH THE BRONCHOSCOPE DURING LIFE.

By HERR MAX MANX (Dresden).

THE GALVANO-CAUSTIC TREATMENT OF LARYNGEAL TUBERCULOSIS.

By HERR SIEBENMANN (Basel).

The treatment of laryngeal tuberculosis by means of local medication has proved a failure and has given place to operative measures. Cutting enrettes and electrolysis have been proposed by Krieg and v. Mermod. Grünwald has recently stimulated interest in the operative treatment of laryngeal tuberculosis. From 1903 to 1908 sixty-six phthisical patients have been operated on in Siebenmann's clinic by means of the galvano-cantery. Hoarseness and more rarely dysphagia were the symptoms complained of; 20 per cent. of the cases had only slight lung disease, 7 per cent. severe lesions, while the remainder were cases of moderate gravity.

Siebenmann attempted to investigate these sixty-six patients in the spring of 1909 with the following results: Dead 36 per cent., failed to report 26 per cent., reported 38 per cent. Of these twenty-five patients (38 per cent.) the lung trouble was slight in twelve and moderately severe in the others. Fourteen cases showed cure of the laryngeal condition, while eleven showed recurrence. Of the fourteen cured cases eleven had been operated on more than one year. Siebenmann thinks it probable that several of the cases who did not report themselves were also cured, and concludes that from 25 to 33 per cent. of cases are cured when seen after an interval of a year or more; recurrence occurs in 15 per cent., and 57 per cent. of cases die. These results agree with those of Krieg and v. Mermod.

As yet we have no means of comparing the results obtained by the different methods of treatment.

The method adopted by Prof. Siebenmann was as follows: A hypodermic of morphia was given three quarters of an hour before operation; during the twenty minutes preceding the cauterisation the larynx was sprayed several times with 10 per cent. cocaine with adrenalin—this often serves to mark out the tubercular areas from the normal mucosa; spiral or hemispherical platinum cautery points are used, and Forest's needle has proved of great value.

The tongue, and in some cases the epiglottis also, is controlled by an assistant; the affected areas of the larynx are burned widely and deeply through the submucous tissue up to the cartilage, and an attempt is made to complete the cure at one sitting; finally an ice compress is applied and the patient is put back to bed. As soon as possible afterwards the patient is sent to the mountains, where he remains for at least some months. At first they found the smoke caused by the cautery a great nuisance until they used warm air insufflations or water sprays; warm air has the advantage of keeping the laryngeal mirror bright during the operation. Swallowing and choking movements occasionally occur and render exact work and the avoidance of injury impossible. In one subglottic case severe bleeding and emphysema of the mediastinum occurred but the patient recovered. Edema was common, and in two cases necessitated tracheotomy and in one intubation; the method is therefore one for in-patient use only. One patient died of heart failure after the operation, and in another case perichondritis occurred leading to fixation of both cords. Extensive laryngeal disease with feeble, rapid pulse is a contra-indication, but on the whole Siebenmann strongly recommends the method.

#### THE INVESTIGATION AND TREATMENT OF FUNCTIONAL DISTURBANCE OF THE VOICE.

By HEER H. GUTZMANN (Berlin).

This paper includes the investigation of (1) the respiratory function in speaking and singing, (2) phonation, (3) articulation. (1) Gutzmann recommends his pneumograph, which records the movement and volume curves; (2) a good singer can reproduce a given note with an error of only 5 per cent.; the human ear can appreciate gross errors, but for small errors a laryngo-tonograph is necessary. Of the three qualities of the voice pitch and timbre are easily measured, and if these two factors remain the same and the same vowel is sung, then the strength depends only on the force used in expiration and can be measured by means of the instrument

of Gutzmann-Weltho. The author recommends passive mechanical breathing exercises, and has also tried to influence voice production in cases of functional disturbance by transmitting to the larynx the vibrations of tuning-forks driven by electricity while the patient is made to sing the corresponding note. In some cases complete voice rest is of great use. Gutzmann also speaks of the importance of electro-, hydro-, and climato-therapy and diet; change of air and occupation are often of service.

#### A NEW KIND OF DIRECT LARYNGOSCOPY AND DIRECT LARYNGEAL OPERATIONS.

BY HERR BRÜNINGS.

The author has invented an instrument called the dynamometric laryngoscope, which measures the pressure exerted on the base of the tongue during direct laryngoscopy; the pressure is read off on a scale and is least when the posterior wall of the larynx is inspected, but rapidly becomes greater as one approaches the anterior commissure. After the free use of cocaine less pressure is, of course, required; the same thing holds good with narrow as compared with broad spatulæ. Brünings noticed that if a singer during the period of greatest pressure were asked to take a certain note he always sang too high on account of the stretching of the cords; on the other hand if one presses on Adam's apple during the singing of a note the tone at once sinks. Brünings then demonstrated his contra-pressure antoscope.

#### NEW ADENOID CURETTE.

BY HERR JOHANN FEIN (Wien).

The shaft is bent at right angles to the handle, which is very thick and has grooves for the fingers.

#### CLINICAL EXPERIENCES IN CASES OF DIFFICULTY ABOUT THE REMOVAL OF THE CANNULA.

HERR EDMUND MEYER (Berlin).

Fifteen cases were reported on; these fell into two groups:

- (1) The removal of the cannula is hindered on account of the tracheotomy and its results.
- (2) The causative disease itself has given rise to changes in the

air-passage, which make the removal of the cannula impossible as long as these changes exist.

(1) The first group is the larger; opinions differ as to the advantages of high and low tracheotomy, but Meyer says it depends on "how," not on "where" the operation is done. Lateral openings, too large or too small openings, lead to granulation-tissue formation, but incision through the cricoid is the worst fault of all. In young children slight granulation-tissue formation or stenosis lead to dyspnoea as the air-passages are small. Fenestrated cannulae are prone to cause granulations unless the opening lies in the middle of the trachea. Meyer does not believe very much in the so-called "cannula habit" or "habit paresis"; he always found an organic basis for the patient's fears.

(2) Scars due to diphtheritic ulceration, papilloma, perichondritis and compression stenosis are the most common causes under this heading. Intubation is the most usual treatment, and in cases of injury of the cricoid Meyer recommends a low tracheotomy in addition to intubation. In cases of scar formation the scar must be excised before the commencement of dilatation; circular resection of the trachea is only necessary in exceptional cases.

#### DEMONSTRATION OF A SPINDLE-CELL SARCOMA OF THE NASAL SEPTUM.

BY HERR KATZ (Kaiserslautern).

The speaker emphasised the difficulty in diagnosis and the importance of removing a piece of the swelling as far removed as possible from the superficial swelling. In the discussion which followed Manasse showed a specimen of endothelioma of the septum; such a condition had not previously been described.

#### DEMONSTRATION OF A SWINGING SPITTOON WITH AUTOMATIC RINSING ARRANGEMENT.

BY HERR WALTER HAENEL (Dresden).

#### ENDOSCOPIC AND RADIOLOGICAL INVESTIGATION OF THE TOPOGRAPHY OF THE AIR-PASSAGES AND THE BRONCHIAL TREE ALONG WITH THEIR CLINICAL APPLICATION.

BY HERR BRÜNINGS (Jena).

Hitherto metal casts have been used, but these have proved

unreliable on account of the weight of the metal and the position of the body. Brünings used a mixture containing 30 per cent. gelatine, and injected this at 60° C. with the aid of endoscopy; he claims that he gets a cast of the normal form of the bronchial tree. In making the photographs they used a stereoscopic X-ray apparatus, and Brünings dignifies the whole process by the name of ortho-stereography. One of the pictures is coloured red and the other green, and the observer inspects them through glasses of the same colours.

#### GASTROSCOPY.

By HEER HENRICI (Aachen).

Henrici has used the gastroscope of Stieda and Lohning, which has a semi-rigid tube to serve as a guide; over this a rubber tube is drawn. This outer tube holds open the passage from the teeth to below the cricoid, and is introduced with the aid of a mandarin. A headpiece attached to the outer tube contains a socket into which the gastroscope fits, the handle of the outer tube being fitted with an apparatus for pumping air into the stomach to cause distension. The light is at the distal end of the gastroscope, and consists of an Osram metal filament, which glows at 3 or 4 volts and gives out very little heat. Above the lamp is a prism which projects the rays from the stomach into the tube, and a lens which diminishes the picture, and therefore enlarges the field of vision but inverts it; finally another lens to rectify this inversion. The heart and aorta are examined, and the œsophagus sounded to make sure that the tube can be passed with safety. Before the examination the stomach is washed out and all fluid removed, and an injection of morphia is administered; cocaine and adrenalin are applied to the posterior pharyngeal wall. The most difficult part is the passage of the gastroscope through the opening in the diaphragm, and when this is accomplished the stomach is inflated slowly by means of the bellows; the degree of inflation is best judged by the sensations of the patient, who is told to lift his arm as soon as he feels pressure in the stomach. The appearance of the pylorus is characteristic, and is at once seen; the opening is always patent, and through it one can sometimes see the mucous membrane of the duodenum. As a rule marked peristaltic movements are observed towards the pylorus, and respiratory and pulsation movements are distinctly visible in the stomach itself. The upper part of the fundus, the lesser curvature, and, in cases of

dilatation, part of the greater curvature cannot be seen. The indications and contra-indications are not as yet fully known. Five cases of successful gastroscopy are detailed, but in no instance was any pathological condition recognised during the examination.

(J. S. FRASER, Edinburgh, *trans.*)

## AUSTRIAN OTOLOGICAL SOCIETY.

*April 26, 1909; Monats. f. Ohren., year 43, vol. 8.*

PROFESSOR V. URBANTSCHITSCH *in the Chair.*

### *Abstract of the Proceedings.*

#### PERSISTENCE OF VESTIBULAR REACTION UNDER APPARENTLY UNFAVOURABLE CIRCUMSTANCES.

BY DR. E. RUTTIN.

This related to a little girl, aged four and a half, who had had an attack of measles in 1908, otherwise there was nothing in her history of importance. For the fourteen days preceding her examination by Ruttin a discharge from the right ear had been noticed, also a swelling behind the right ear, and the right eye remained open. The condition of her hearing could not be ascertained on account of her age, but the response to the caloric test elicited a prompt nystagmus.

The radical operation was performed on March 30 and the wall of the labyrinth inspected under "tonogen," when the facial nerve was seen to be lying exposed in its horizontal part and surrounded with granulations. During the after-treatment two areas of necrosis were discovered, the one behind and above the horizontal canal and the other in front and low down close to the floor of the tympanic cavity; but in spite of these circumstances a prompt response was still obtainable to the caloric test. The case demonstrated that even with necrosis in its immediate neighbourhood the vestibular nerve may escape.

#### SPECIMEN OF AN UNUSUAL SEQUESTERUM.

BY R. BÁRÁNY.

This consisted in a piece of dead bone the result of tuberculous disease which the exhibitor had found during a radical

operation, and in which was contained the stylo-mastoid foramen. No trace of any paralysis of the facial nerve had existed before the operation. The sequestrum also included the whole of the apex of the mastoid process and the lower and anterior wall of the meatus as well. It was embedded in granulations, and only at one point in the course of the Fallopian canal was still united to healthy bone. The facial nerve was quite unaffected. Thus even extensive necrosis of bone need not necessarily mean destruction of function of the nerves in its immediate vicinity, as indeed was also shown by the case which Ruttin had quoted. Heine had published a case in the previous year in which, four weeks before the removal of a sequestrum representing the whole of the labyrinth, a reaction to the caloric test was obtained, from which result he (Heine) contended that this response could be evoked even with the labyrinth destroyed. Bárány, however, submitted in the light of these cases that the vestibular nerve may still functionate although surrounded with an extensive necrotic area of bone.

ALEXANDER had seen a large number of cases of this description where sequestra of the labyrinth had not depreciated the hearing, or cholesteatomata surrounding the facial nerve had not led to any paresis. Also in his researches as to leukemia he had found in two cases severe hæmorrhage into the Fallopian canal, whilst the function of this nerve remained intact. He had even found the nerve-sheath infiltrated with pus without any further effect on the nerve itself. The facial nerve, he considered, is able more than any other to withstand adverse influences, whilst the cochlear nerve, on the other hand, does not possess this power. There is a relation, he submitted, between this circumstance and the size of the nerve-cells and bundles, of which the largest are found in the facial and the smallest in the cochlear. Also the vestibular nerve is more resistant than the cochlear. He considered that the facial nerve *might* be unaffected by hæmorrhages, inflammation, necrosis, or cholesteatomata.

V. URBANTSCHITSCH reminded the meeting in this connection of the former terminology of the seventh and eighth nerves, viz. "portio dura" and "portio mollis" respectively.

H. FREY recalled a case in which almost the whole of the temporal bone was involved in a carcinomatous growth, including the facial nerve, which, however, was quite unaffected.

F. ALT had removed a sequestrum of the whole of the labyrinth, and yet in this case there was only an insignificant paresis of the facial nerve.

NEUMANN also agreed with the previous speakers as to the remarkable way in which the facial appeared to avoid the effect of lesions immediately around it. This he attributed, not to its anatomical position alone, but also to the fact that it was supplied by the stylo-mastoid artery, whereas the labyrinth depended on the internal auditory branch of the basilar artery; therefore it was quite conceivable that the labyrinth might be widely necrosed and yet the facial nerve hardly suffer. Speaking generally he thought it would be found that the cochlear nerve would be the first to be affected, the vestibular next, whilst the facial possessed a greater power of resistance than either of the other two.



(In my investigations into the vestibular conditions of so-called "deaf-mutes" one of the main points noted was that the vestibular branch of the auditory nerve was by no means always affected in the same degree as the branch to the cochlea. A. R. T.) JOURN. OF LARYNGOL., RHINOL., AND OTOL., November, 1908.

#### A MODIFICATION OF THE METHOD OF CARRYING OUT GELLÉ'S TEST.

BY R. BÁRÁNY.

This modification is performed by means of the ordinary otoscope interrupted in its middle by a T-shaped piece of brass tubing. A third piece of rubber tubing is attached to the free end of the "T," and by means of a suitable mouth-piece is held in the mouth of the observer, the remaining two ends being inserted into the ear of the patient and that of the observer in the usual manner. Thus both hands are free to carry out the test, which is conducted in the usual way, except that aspiration and compression of the air in the meatus is brought about by inflation or suction with the observer's mouth. The value of this method lies in the fact that the observer has an accurate check as to whether the otoscope is "air-tight" or not, and in addition can readily and accurately compare the report of the patient with his own observations. As to the exact inference to be drawn from this test Bárány did not at present wish to commit himself, but he maintained that his modification would be found a more accurate means of carrying it out.

BING considered that the variations in the perception of the note of the tuning-fork were dependent on the variations of pressure produced during the test in the labyrinth (and thus affect the sense of perception on the part of the auditory nerve), and not, as Bloch had thought, on the consequent tension of the tympanic membrane.

RUTTIN remarked that if the variations of pressure in the labyrinth played so important a part in Gellé's test one should expect a very marked result in cases which showed the fistula symptom, which, however, after frequent investigation, he had been unable to discover.

R. LEIDLER suggested that the reaction to Gellé's test depended on the density of the air itself in the meatus.

BÁRÁNY replied that it was well known that compressed air formed a better conductor of sound, and that therefore this condition did not constitute a factor in the production of this phenomenon.

#### AN ANOMALOUS RESPONSE TO HEARING-TESTS.

BY R. BÁRÁNY.

This occurred in two cases of a marginal perforation in the lower and anterior quadrant. The cartilage-conduction was better

than the air-conduction, either when the prongs of a strongly vibrating fork were held in front of the meatus and then the handle applied to the cartilage, or if the conduction of the soft parts and the cartilage were compared by means of his method with the otoscope. Further, it was remarkable that when the ear was occluded the cartilage-conduction became weaker. It proved that air- or cartilage-conduction were not interdependent. If the perforation were occluded by means of a swab this abnormal response disappeared.

ALEX. R. TWEEDIE (*trans.*).

## Abstracts.

### PHARYNX.

**Citelli.**—*Three Cases of Primary Gangrene of the Pharynx.* "Arch. Internat. de Laryngologie, etc.," Tome xxvii, No. 1, January-February, 1909, p. 66.

The patients were a female, aged twenty-five, the subject of syphilis, a child, aged eight, and an adult male. The male alone recovered.

In all the cases the throat at first presented whitish, circumscribed patches, which, in two, gave rise to suspicion of diphtheria. But the rapid extension of the lesion and the transformation of the tissues into foul necrotic masses induced the author to look upon the disease as gangrene due to the action of virulent septic organisms. In one case three injections of diphtheria antitoxin were given, in another one injection, in neither with any benefit.

Bacteriological examination was not made in any of the cases.

The recovery in the last case is ascribed to the action of anti-streptococcus serum.

Dan McKenzie.

### NOSE.

**Sluder, G.**—*The Anatomical and Clinical Relations of the Spheno-palatine (Meckel's) Ganglion to the Nose and its Accessory Sinuses.* "New York Med. Journ.," August 14, 1909.

The author reports cases of severe neuralgia of migraine type, associated with post-ethmoidal or sphenoidal sinusitis, or both. On the assumption that the pain was due to pressure on or infiltration of Meckel's ganglion, he made various applications, through the nose, over the spheno-palatine foramen with remarkable effect. The most satisfactory analgesic was a saturated (67 per cent.) cocaine solution, of which one drop was usually sufficient, whilst 0.4 per cent. solution of formaldehyde was nearly as good.

Macleod Yearsley.

**Leland, G. A.** (Boston).—*Nasal and Naso-pharyngeal Conditions as Causative Factors in Middle-ear Diseases.* "Boston Med. and Surg. Journ.," September 30, 1909.

After pointing out the number of middle-ear conditions traceable to nasal causes, and the excellent way in which the ear is protected, the

author considers this protection under the heads of (1) structure of Eustachian tube, and (2) influence of normal respiration. Describing the normal respiratory movements which take place in the Eustachian tubes, he points out that continuous nasal respiration is essential to the preservation of proper nasal passages, and that the time to cure chronic middle-ear catarrh is in early life, by restoring the movements of the Eustachian tubes. In removing adenoids it is of the highest importance that the fossie of Rosenmüller should be cleared efficiently, and operation is practically useless without this precaution. In later life, also, the freedom of the Eustachian lip for its movements in respiration is essential in treating catarrhal deafness. We cannot, however, go so far as to believe, as Leland suggests, that oto-sclerosis may be prevented by these measures.

*Macleod Yearseley.*

### LARYNX.

**Kessel, O. G.** (Stuttgart).—*Contusion of the Larynx: ? Dislocation of the Left Arytænoid Cartilage.* "Medicin. Corresp.-Blatt des Württem. ärztlich. Landesvereins," October 9, 1909.

A labourer, aged forty-two, sustained a severe blow on the head from a mass of earth which fell on him, whilst at work, from a height of two metres. He was knocked down, and as he fell the handle of a tool which he was using struck him on the throat and chin. He was able to rise at once, but directly he spoke it was noticed that his voice, which before had always been clear and resonant, was now husky; otherwise he had no difficulty in breathing and did not cough up any blood. About three hours after the accident he applied for treatment, when the following conditions were observed: He complained only of the hoarseness of his voice and very slight pain and difficulty in swallowing. There was a flesh wound on the chin 5 cm. long and a small excoriation over the larynx. The hyoid bone and thyroid cartilage were not tender nor was any crepitus to be detected, but the upper portion of the larynx at the side was sensitive on pressure. On examination of the nose and nasopharynx no abnormality was noted. The upper opening of the larynx was normal in contour and in its movements during phonation, but at the base of the tongue was a patch of submucous hæmorrhage especially marked on the left side, and in addition the left pharyngo-epiglottic fold was also injected. The ary-epiglottic folds were also swollen, the left being more affected than the right, and the left arytænoid cartilage itself was oedematous. The left vocal cord lay in the middle line perfectly motionless, as was also the left arytænoid cartilage. The left ventricular band was much swollen and injected, but still allowed this latter condition to be recognised. Both vocal cords were white but traversed by distended vessels. The movements of the right vocal cord were normal. The examination of the trachea by the direct method revealed nothing abnormal (a procedure which under the circumstances it would have surely seemed well to postpone), that is to say, the appearances apart from the general swelling and injection were those which obtain in the condition of complete recurrent palsy on one side.

The patient at his own wish returned home and no further complications ensued. The swelling subsided in three weeks, but the left cord still remained immovable although the voice improved somewhat. He returned to his work in five weeks from the date of the accident. Four months later an examination showed that the left cord was yet unable to

be moved but the voice was considerably better, and the patient only complained of a pricking pain occasionally when swallowing.

Kessel regards the condition as a traumatic subluxation of the left crico-arytænoid joint, perpetuated by the organisation of the inflammatory exudate which took place immediately after the accident. He discusses the differential diagnosis between this and recurrent palsy, and remarks on the extreme rarity of a dislocation in this situation.

From the account of the case, however, it would seem difficult to support the view that the lesion in question might not have been the result of paralysis of the inferior laryngeal nerve.

No further report is given as to the subsequent course of the case.

*Alex. R. Treedie.*

### EAR.

**Urbantschitsch, Dr. Ernest.**—*Purulent Conditions of the Eustachian Tubes.* "Monatss. f. Ohrenh." Year 43, No. 7.

Too little attention, the author writes in his opening remarks, has always been given to this particular subject by all writers on otological matters, diseases and affections of the Eustachian tubes being treated only in conjunction with inflammatory conditions of the middle ear.

It is usual, he states, to regard chronic purulent conditions of the middle ear as falling into two main groups: the one, which owing to involvement of the adjacent bone is characterised by a perforation situated at the margin of the tympanic membrane (antral or attic disease), and the other in which the perforation is found more towards the centre and is dependent on some disease of the mucous membrane of the tympanic cavity proper.

To these two groups the author would like to add a third, in which the chronic purulent middle otitis is due to chronic inflammatory conditions of the Eustachian tube. The special features which characterise this group are as follows: a large perforation, most often situate in the lower and anterior quadrant of the membrane, more or less injection of the mucous membrane, a non-fœtid secretion which is more often purulent than muco-purulent, no great amount of granulations or polypus formation, and lastly, as a special pathognomonic sign, a spontaneous passage of fluids down the tube.

This latter sign can be demonstrated objectively, the author states, by the instillation of coloured drops, *e.g.* methylene blue, which can be recognised generally in less than one minute at the pharyngeal orifice of the tube, or if drops containing alcohol are used the patient will feel a burning sensation in the throat.

Such cases Urbantschitsch contends are best treated by irrigation of the tube through a catheter, and subsequently, if necessary, by massage of the tube by means of a bougie, in order to restore the tone of its lining membrane and reduce thereby the abnormal patency of the lumen.

He concludes by summarising his views in the following manner:

(1) Those forms of chronic middle-ear discharge which have hitherto been usually regarded as due to inflammatory conditions around the tympanic orifice of the Eustachian tube or to affections of the nasopharynx are really dependent on a chronic suppurative process in the tube itself. Thus it would be more correct to allude to such cases as "tuborrhœa" rather than "otorrhœa."

(2) This state of affairs is usually characterised by the spontaneous passage of fluids, instilled into the ear, down the tube into the throat.

(3) This latter symptom should be an indication to treat the case by irrigation of the tube.

(4) Irrigation of the tube is contra-indicated in all conditions other than those in which this spontaneous passage of fluids takes place, or where a slightly raised air-pressure in the meatus effects the same result.

(5) Abnormal patency of the tubes is best treated by "friction-massage" carried out by manipulation of a bougie passed into the tube.

(6) Ordinarily one or two irrigations will check such tubal suppuration, and the restoration of an abnormally patent tube by this friction-massage is effected in from two to four sittings.

(7) Reinfection, however, at first may take place, attributable to the very chronic nature of the cases under consideration. One more sitting is usually sufficient to cure such a relapse.

Several cases are quoted, with an account of their treatment on these lines, and the technique is described in detail. On the whole, however, except as regards his suggested classification, the article does not appear to contain any new methods of treatment, and the author's chief object apparently is to demonstrate that an intractable aural discharge may be really tubal in origin.

*Alex. R. Tweedie.*

**Macleod Yearsley and H. E. Wingfield.**—*A Case of Hysterical Deafness Treated by Suggestion.* "Lancet," October 2, 1909.

The case was a woman, aged thirty-seven, deaf for two years. There was a marked hysterical history. The physical examination of the ears and nose revealed nothing abnormal, and the tests gave very unreliable reactions. Under suggestion treatment she improved decidedly, but was obliged to leave England before the treatment was sufficiently prolonged.

*Macleod Yearsley.*

**French, J. Gay.**—*An Investigation into the Action and Uses of Fibrolysin in Middle-ear Deafness.* "Lancet," July 24, 1909.

French has used injections of fibrolysin in middle-ear disease. In 52 cases of deafness and tinnitus the hearing improved, and noises diminished in 16. In 16 cases of deafness without tinnitus 10 improved. Post-suppurative cases gave by far the best results, especially when the injections began immediately after the cessation of the discharge. No results were obtained in oto-sclerosis. French injects 30 minims twice a week into the upper arm and uses also 5 minims to the middle ear through the Eustachian catheter.

*Macleod Yearsley.*

**Byrnes, H. F.**—*Vestibular Nystagmus and its Relation to the Sound-perceiving Apparatus.* "Boston Med. and Surg. Journ.," July 29, 1909.

A short account of vestibular nystagmus. The author complains that little or nothing has been done in America on the subject.

*Macleod Yearsley.*

**Hartge.**—*A Case of Menière's Apoplectic Deafness with Fatal Result.* Society of General Practitioners at Libau. "St. Petersburg. med. Wochenschr.," 1909, xxxiv, 8, 373.

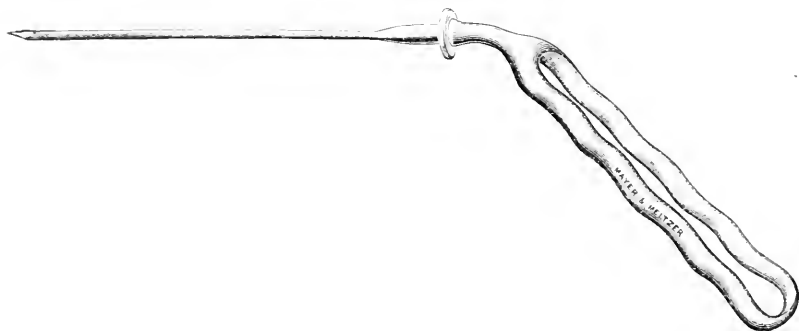
The patient, a man, aged forty, had suffered from slight deafness and tinnitus in the left ear for some years. On April 2, 1908, he was seized with an attack of vertigo and tinnitus ending in vomiting; no loss of consciousness, but after the attack marked deafness in the left ear.

After a few days' rest in bed he felt quite well, except for the deafness. On April 11 he had another severe attack of vertigo and fell down, but did not lose consciousness. After this attack there was absolute deafness on the right side and marked deafness on the left. On April 14 he developed pain in the back of the neck; respiration irregular; in the evening he vomited, and later became delirious. Next morning quite conscious. April 18, shooting pains in the body; rigor. He became unconscious, breathing became paralysed, but pulse continued for some minutes after. *Post-mortem* examination was not permitted. Probably the final cause of death was a hæmorrhage in the medulla.

W. G. Porter.

## NEW INSTRUMENTS.

### A NEW MODIFICATION OF LICHTWITZ' TROCAR.



The accompanying wood-cut is an illustration of a modified Lichtwitz trocar and cannula which Messrs. Mayer and Meltzer have made for me. In this pattern the flange of the cannula is about three sixteenths of an inch greater in diameter than the shoulder on the trocar, thus enabling the two parts to be more easily disengaged after the instrument has been inserted. The handle is larger and affords a better grip, and as it is set on at the usual "nasal angle" the exact site of the puncture is more accurately determinable.

Alex. R. Tweedie.

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- Garel, Dr. J. *Diagnostic et Traitement des Maladies du Nez. "Rhinoscopie,"* (*Diagnosis and Treatment of Diseases of the Nose. "Rhinoscopy."*) 145 figures in the text and 4 plates. (Third edition.) Paris: Vigot Frères. 1910.
- Knight, Charles Huntoon, A.M., M.D., and Bryant, W. Sohler, A.M., M.D. *Diseases of the Nose, Throat, and Ear.* (Second edition, revised, with 239 illustrations.) Philadelphia: P. Blakiston's Son & Co. 1909.
- Lockard, Lorenzo B., M.D. *Tuberculosis of the Nose and Throat.* (With 85 illustrations, 64 of them in colours.) St. Louis: C. V. Mosby Medical Book and Publishing Co. 1909.

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